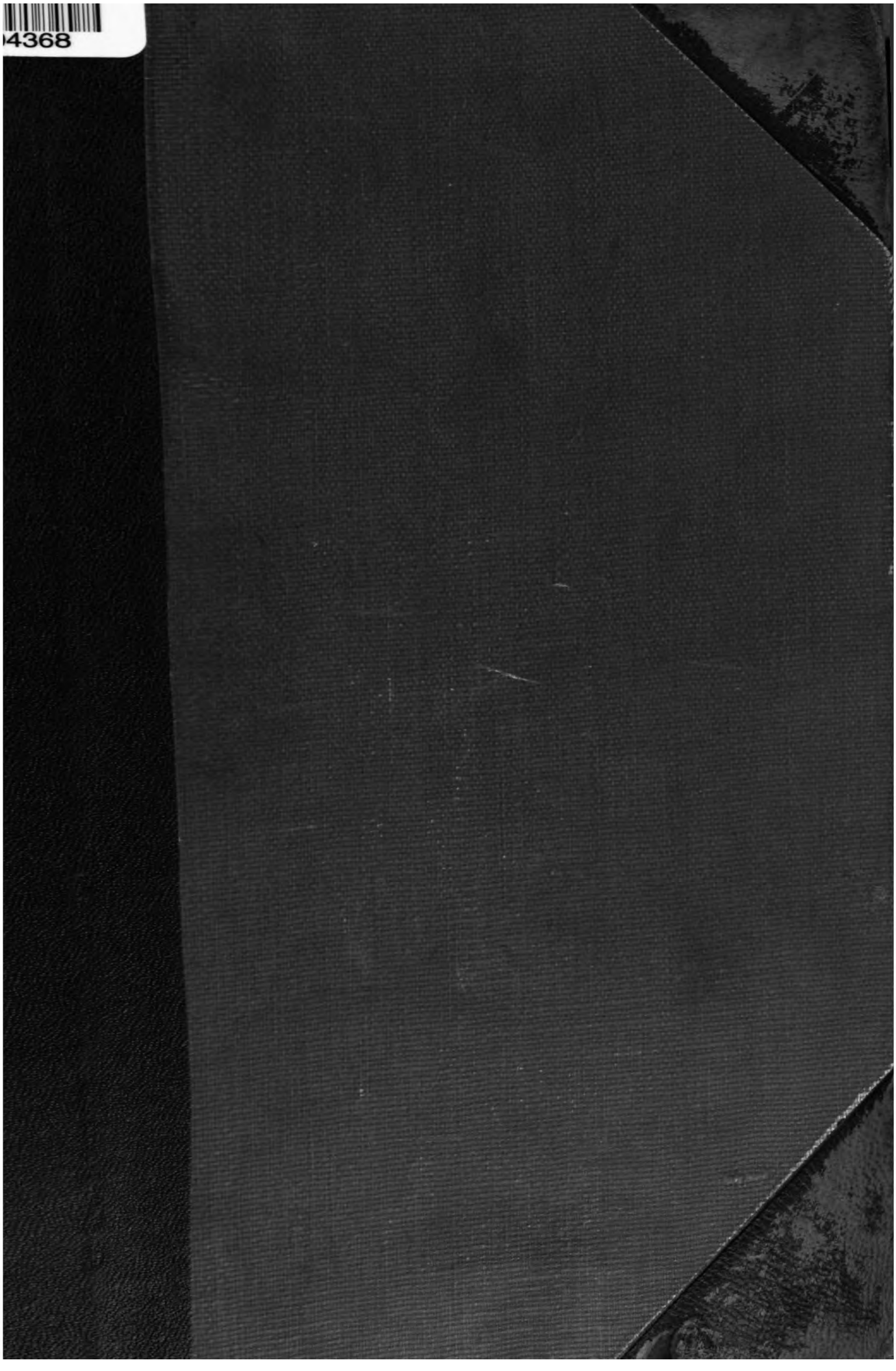


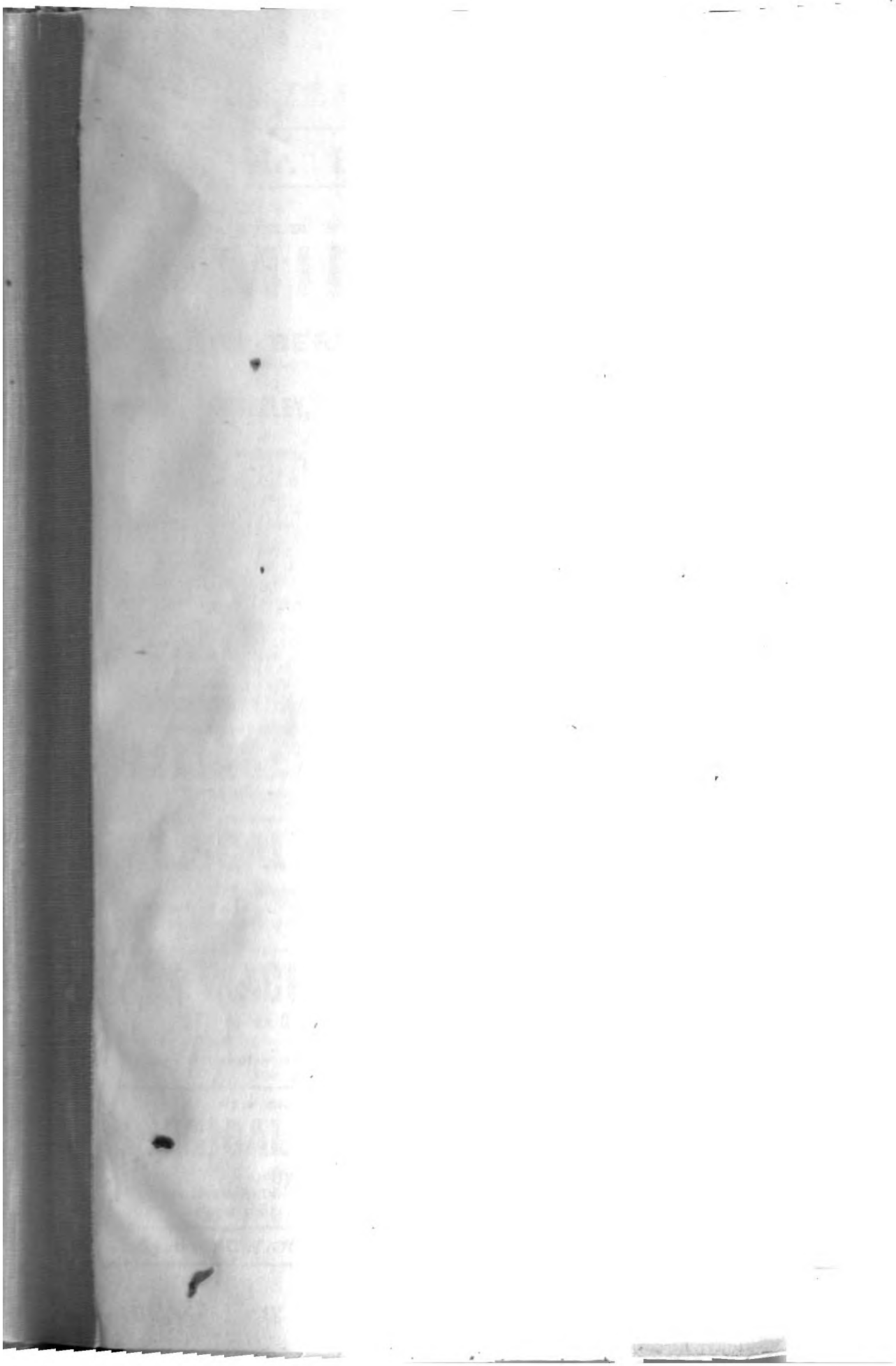
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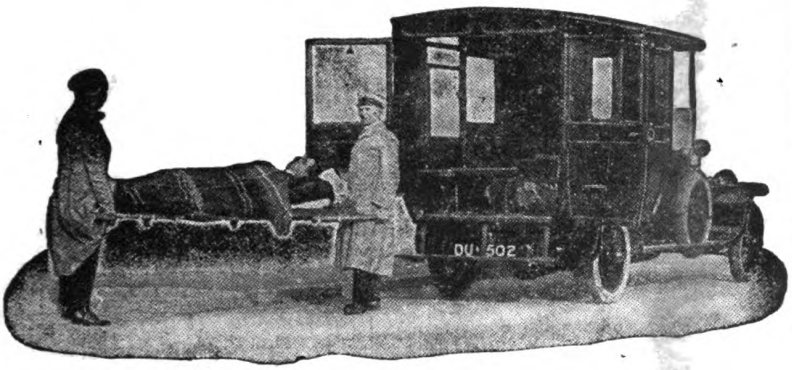
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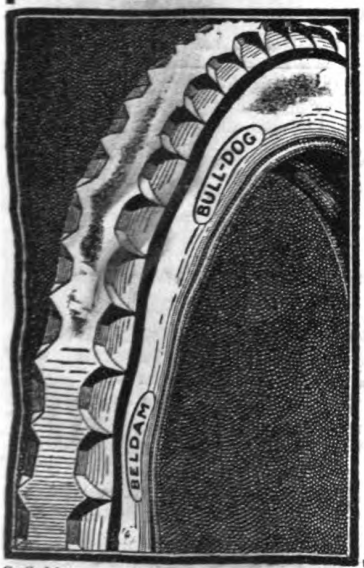
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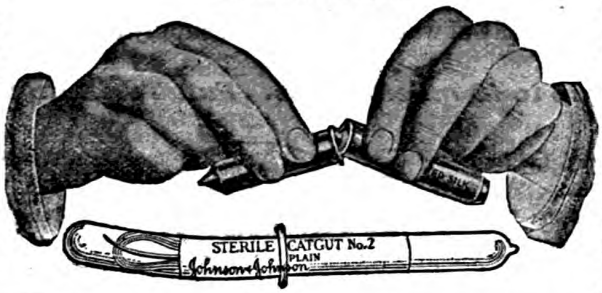
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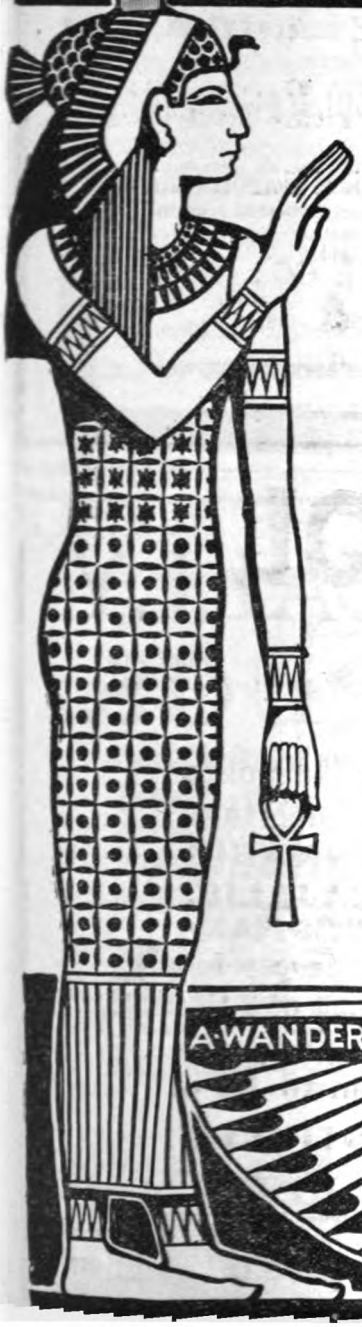
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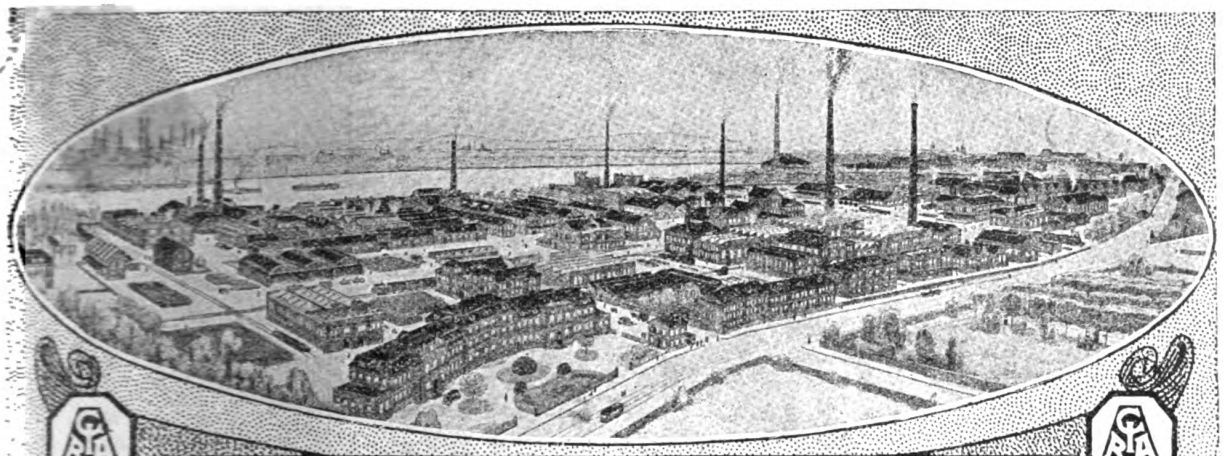
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ON
CONCUSSION INJURIES OF THE VISUAL APPARATUS IN WARFARE. OF CENTRAL ORIGIN.

*Delivered at the Annual Congress of the Ophthalmological Society of the United Kingdom, May 5th, 1917,**

By S. A. KINNIER WILSON, M.D., B.Sc. EDIN., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN, WESTMINSTER AND NATIONAL HOSPITALS; NEUROLOGIST, FULHAM AND NAPSBURY MILITARY HOSPITALS; PHYSICIAN, LORD KNUTSFORD'S SPECIAL HOSPITALS FOR OFFICERS, ETC.

MR. PRESIDENT AND GENTLEMEN,—It is imperative at the outset to indicate as precisely as possible what type of case is to be assigned to the above category, for the whole subject of concussion and commotio is still surrounded with considerable obscurity, and looseness of conception is responsible for a certain amount of clinical confusion.

CEREBRAL CONCUSSION AND COMMOTIO.

The difficulty is not lessened by the fact that the usual definitions of concussion and commotio do not command universal consent. Cerebral concussion is commonly understood to signify a violent shaking or jarring of the cranial contents without any structural lesions, and it seems certain that in some cases which have proved fatal the most painstaking investigation has failed to reveal any recognisable anatomical lesion. Yet the idea of a *morbus sine materie* is so repelling that to explain such cases a condition of "shock" is postulated, i.e., a reflex inhibition of certain cerebral mechanisms essential to life, or a condition of commotio, i.e., molecular concussion, producing the same result. Not a few writers, however—Kocher,[1] Page,[2] Thorburn,[3] Stolper,[4] Schmaus,[5] Hartmann,[6] and others—deny the reality of spinal or cerebral molecular concussion (commotio), maintaining on the contrary the impossibility of a severe or fatal cerebral or spinal affection without any definite anatomical lesion.

In most cases of severe blows on the head, as a fact, which have been diagnosed as concussion and which have proved fatal, examination has shown the presence of capillary hæmorrhages, minute lacerations of cerebral substance, and consequent disintegration of myelin, such as are sufficient to account for the clinical symptoms. Further, as Warrington[7] has remarked, and as any who have considered the subject must have realised, there is, with the blow, a sudden violent dispersion of cerebro-spinal fluid, which tends to escape too abruptly by the natural exits. Hence ensues a tearing of lymph channels and injury to the adjacent cerebral tissues.

In non-fatal cases, where the symptoms, though definite enough, have eventually cleared up completely, it is justifiable to assume organic lesions such as have been enumerated, which have not, however, been sufficiently widespread or serious to effect permanent impairment of cerebral function. For such cerebral conditions, where one has reason to suppose recognisable, if temporary, organic changes have occurred, it is preferable to employ the term cerebral contusion.

For the purposes of this paper, then, cerebral contusion may be taken to be the pathological basis of the condition known clinically as cerebral concussion.

Now, it does not appear practicable to draw a hard-and-fast line between such cases and those, slighter in degree, to which the term commotio—i.e., molecular concussion—may be applied. A knock on the "funny bone" produces a transient disturbance of sensibility in the ulnar distribution, as a basis for which we may perhaps postulate transient oscillations in the axoplasm of the nerve fibrils; whatever it be, we must imagine some change taking place. When the pressure of one limb on the popliteal nerves of the other results in the foot's becoming "asleep," we suppose a disturbance of function whose basis may be interruption of periaxonal or perineuronal lymph circulation. Let the pressure continue longer, as in, say, a crutch palsy, and we have an actual organic impairment of function which may take weeks to clear up. We call such a condition, *faute de mieux*, a pressure-"neuritis"; but the accuracy of the term, pathologically speaking, is problematical; indeed, whether any recognisable change could be determined microscopically is questionable. It is impossible to say in such a series of instances at what precise stage the term "structural change" may be fairly adopted, and the difficulty is not less in regard to cerebral commotio. Oppenheim,[8] in opposition to the other authorities quoted above, is unwilling to relinquish the conception of molecular concussion or commotio, although he rather admits that for him the conception does not exclude the possibility of such fine organic changes as alteration in capillary or lymph-channel walls, disintegration of the myelin in individual fibres, and so on. From the nature of the case, in the present state of knowledge the matter must remain in the realm of hypothesis.

While, then, the question of the actuality or otherwise of molecular concussion or commotio is still *sub judice*, and to some may be of mere academic interest, it should not be overlooked that from the clinical side it presents features of importance. In the course of the war there have come under my notice a large number of concussion lesions of the spinal cord of every kind, which may range from complete pulping of the cord at a given level, with dura mater intact and untouched, to a concussion such as reveals itself solely by transient symptoms of the type unfortunately termed "functional." Clinically there is, at the one extreme, a total motor and sensory paraplegia; at the other, the tremulous weakness, paræsthesiæ, and exaggerated reflectivity of "functional" disease. For practical purposes it is convenient and serviceable to divide cases into organic and "functional," but more than one case has come under my notice that has clearly been a sort of "missing link" between the two groups.† The evidence undoubtedly suggests that in certain cases so-called "functional" symptoms following immediately on spinal concussion are but the expression of an organic alteration minimal in degree and insufficient to result in the appearance of organic symptoms as ordinarily known. The significance of this will be seen subsequently in regard to the visual apparatus.

EVIDENCE AFFORDED BY EXPERIMENTAL WORK.

Experimental work on the subject of concussion and commotio has been attempted to some extent, but it does not help to clarify our ideas as much as might have been expected. Schmaus[5] has demonstrated, in artificial concussion of the cord in kittens, swelling and degeneration of axones and fragmentation of myelin, without any gross pathological lesion. It has been shown that a blow upon the head of an animal may occasion this myelinic change in the fibres of the medulla, and even of the cord, presumably by dispersion of the cerebro-spinal fluid. Much the best and most scientific experimentation has been conducted by Alan Newton,[10] in the laboratory of the late Sir Victor Horsley. Newton allowed a glass rod, 8 mm. in diameter and weighing 50 gm., to fall upon the exposed spinal cord from varying heights, accuracy of direction being obtained by means of a glass tube, 1 cm. in diameter, through which the weight fell. So marked was the effect from heights of 40, 20, or 10 cm. that the height was reduced to 2 and finally to only 1 cm. The latter was a feeble blow, producing no visible effect on the cord, yet it completely abolished motor conduction for several days, both in the cat and the monkey. It is important, further, to note that a dissociation in conductivity was obtained, sensory conduction being still demonstrable, though motor inhibition was complete. The anatomical changes found in such animals were described by Newton as "trivial"; "they consisted of small hæmorrhages in the grey matter, usually in the basal region of the posterior cornua or in the posterior grey commissure, scattered swellings of axis-cylinders, and disintegration of myelin sheaths."

These experiments suggest that there is an organic basis for the transient disturbances of function seen in so-called "railway spine" and allied conditions of traumatic neurasthenia, and they bear out what has already been remarked, that "functional" symptoms may be the expression of minimal organic changes. They also prove the occurrence of a relatively surprising amount of tissue change from a feeble impact on the exposed cord, and show that the blow capable of producing merely a molecular concussion must be slight.

* THE LANCET, 1917, i., 814.

† In this connexion some cases reported by Elliott[9] are of interest

RARITY OF CASES OF PURE VISUAL CONCUSSION IN WARFARE.

When, from these necessary preliminary considerations, we pass to the question of concussion injuries of the visual apparatus in warfare, of central origin, we are compelled to the conclusion that a molecular concussion, or commotio, is almost certain to be of great rarity, for the simple reason that the impacts of high velocity projectiles, or even of shell fragments or spent bullets, are tremendous, to a degree far beyond that of the glass rod utilised in Newton's experiments. The shooting editor of the *Field* has written a letter on the subject, which is quoted by Musson [11] in his recent paper on the finer histological changes in the spinal cord following bullet wounds of the cord substance or shock to the vertebral column, and which contains useful information on the topic under discussion. It relates to the ·303 Mark VII. service bullet, weighing 174 grains.

Assuming that such a bullet strikes the body at 200 yards with 1000 foot-pounds energy, and is pulled up in 3 inches by the skin, muscles, and spinal column, the resistance offered by the tissues is on the average ..... 4000 lb. This 4000 lb., being the resistance offered by the tissues, may be regarded as the static pressure of the bullet acting against the tissues.

That an impact so tremendous should render the occurrence of a mere commotio practically an impossibility is not in any way surprising. And even though a bullet be spent or a shell fragment be pulled up by a steel helmet, the force of the blow must still be much beyond that which has often produced a concussion or commotio in civilian cases.

It will be seen, therefore, at once that while gross contusion lesions of the central visual apparatus are common enough, one may have to seek far and wide ere one can find a case which for the purposes of this communication may be admitted into the category of visual concussion, where, one may suppose, the organic disturbances are of the trivial nature that has already been described.

At Fulham Military Hospital and Napsbury War Hospital a large number of head injuries of all sorts have been referred to me; at the National Hospital and at Lord Knutsford's Special Hospitals for Officers, in addition to my own cases, I have had the opportunity, through the kindness of my colleagues, of going over a very considerable number of head cases with visual symptoms, and it may be said at once that only one case, described below, approaches the conception of an uncomplicated visual concussion, and even it is by no means free from objections. Two other cases to be quoted are instances of visual symptoms following blows on the head, but the mechanism of production of these symptoms is not that of concussion, and they are cited by way of contrast. After two and a half years one is still looking for a case where a direct blow on the head from any form of projectile, without gross wounding, has resulted in an uncomplicated visual commotio analogous to the cases of spinal-cord or peripheral-nerve commotio that have been, relatively speaking, common.

CASES EXCLUDED FROM CONSIDERATION.

Let it be observed that all cases of visual disturbances from shell explosions *in the vicinity of* the individual concerned are purposely excluded. They belong to another group. Such are common and well known (see, for instance, Myers's [12] cases). I am not concerned to deny that violent dispersion of the air is a physical factor which may produce physical, i.e., organic, injury; on the contrary, two genuine cases of organic lesion of the spinal cord from shell explosions, without any outward mark, have come under my notice, and others (e.g., Ravaut [13]) have described similar examples. As long ago as the battle of Trafalgar, as Mahan tells, Nelson's clerk was "killed by the wind of a ball, though his person was untouched." Still more may such dispersion occasion transient disturbances of the kind we call "functional," though they may have some subtle organic basis underlying them. But obviously other factors, of a different class from those leading to commotio, come into play in such cases—"shell shock" is a complex resulting from several agencies. Further, it is difficult to imagine how visual impairment from "shell shock" could be of central origin, unless, of course, the patient, knocked over by a shell explosion, were to strike his head in falling. The peripheral visual apparatus is exposed, whereas the central apparatus is protected by the cranial box; it is the peripheral mechanism that must take the brunt of such "windage" effects. A consideration of the frequently accompanying phenomena of photophobia, blepharospasm, of "eyes burning," and so on, bears this out. To attempt to demonstrate the possibility of central defects by the action of diaschisis from peripheral concussion would be impracticable. Unless an exact history of a fall on the head from a shell explosion were forthcoming, the occurrence of central concussion from "shell shock" can scarcely be established. Personally, no such case has come under my observation, out of a very large number of cases of "shell shock."

Secondly, all cases of head wounds with resulting more or less permanent organic visual defects are excluded. Many cases of ordinary head injuries in the occipital region, with resulting scotomata and hemianopias of various kinds, have come under notice. Only a relatively gross organic defect in the form of loss of cortical substance, cortical or subcortical hæmorrhage, &c., will explain the condition, clinically, so that they do not belong to the concussion group. It is a matter of common observation that in the majority of such cases a period of practically complete blindness is the initial phase, much of which subsequently clears up. In Marie and Chatelin's recent paper,[14] for instance, it is noted, in passing, that most of their patients with varieties of hemianopic defect were blind for so many hours or days at the outset. Where, however, we have actual gross injury to the skull and intracranial contents, it is impossible to determine whether cortical laceration, or œdema, or subdural or subarachnoid effusion, or capillary oozing, or other obvious organic change, or merely a concussion or commotio, is the underlying factor for such symptoms as clear up completely. For this reason, if for no other, one cannot take severe head injuries into the class which forms the subject of this communication.

CASE OF VISUAL CEREBRAL CONCUSSION OR COMMOTIO.

We are left, then, with cases where a blow on the head produces visual symptoms that tend to clear up, but does not result in a permanent hemianopia in any of its varieties or other type of organic symptom. Though the case about to be quoted admittedly does not come up to the proposed criterion it is the one least open to objection.

CASE 1.—Private A. B., aged 19, with a negative previous and family history, was wounded at 4 P.M. on Dec. 14th, 1916. At the time he was stooping down, cutting wood, in a little dug-out. He was hit on the back of the head, in the mid-line, just below the margin of his steel helmet, by a fragment of a shell and lost consciousness for, at the most, three minutes. He came to, to find a mate moving his right arm, which had also been hit and which was very painful; it was, perhaps, this pain which reached his sensorium and brought him round. At the same time he had racking pains all over the head, was very sick, and found he was completely blind in both eyes. He kept asking whether his eyes had been hit, as he could see nothing at all, only blackness everywhere. He remained thus blind for between 40 and 48 hours. On the third day he found that he was beginning to see dimly with both eyes, and trying each separately he found he could see a little with each. He saw a hand holding a medicine-glass, but nothing beyond that; such objects appeared very near him, but not altered in size—there was, in other words, no dysmetropsia with this defect in the appreciation of distance. The same afternoon he was operated on, and a small piece of loose fractured bone removed from the head wound; again, two days later, a second small splinter was taken out.

Towards the end of the first week, when his sight was improving, he frequently noticed a succession of faint, dark, shadowy forms and figures moving to and fro in front of his eyes, apparently. He never could make out quite what they were, except that they were always shadowy and dark with no colour in them. Sometimes they were still. He used to shut his eyes to get rid of them, but this procedure did not banish them, or, rather, sometimes it did and sometimes it did not. These subjective visual phenomena disappeared after about a fortnight. Of them the patient remarked that they always appeared smaller than reality, whereas objects seen in front of him were of normal size. Only the hallucinations were micropsic. It should be stated that at no time were the patient's eyes bandaged, nor was there at any time either photophobia or blepharospasm.

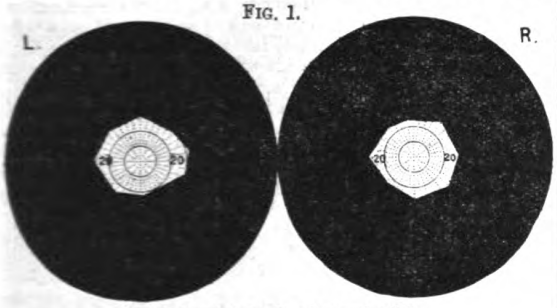
Very slow improvement took place, and when the patient came under my observation two months later his condition was as follows. The pupillary reactions were normal. The optic discs were normal with no indication of previous neuritis. There was no trace of any form of hemianopia or of scotoma, central or otherwise. Vision was R. 6/60, L. 6/60; Jaeger 14 R. and L. There was no headache, giddiness, or sickness. Careful routine examination of the nervous system revealed no abnormality except in regard to the visual fields. Here there was a concentric diminution of both fields, not quite symmetrical, both for white and colours, and also a marked condition of visual fatigue, so that excellent examples of a helicoid curve were obtained, in both eyes. This helicoid was present both for white and colours, and was rather flattened in a vertical direction. Bjerrum's screen was always used in testing.

The patient was re-examined at intervals during the next two months, the improvement continuing slowly. On May 4th his vision was R. 6/20, L. 6/15; Jaeger, R. 6, L. 4. The fields were distinctly better than before in the sense of being less constricted; the helicoids were again obtained. (Figs. 1, 2, and 3.)

The patient is still under observation.

As the X ray photograph shows, and the fact of operation indicates, we are dealing in this case with a lesion of undoubted severity, the outer table being splintered and the inner being cracked, and perhaps slightly splintered too. It is not to be denied that with such a lesion submeningeal effusion, or intracortical capillary hæmorrhage, or tearing of

FIG. 1.



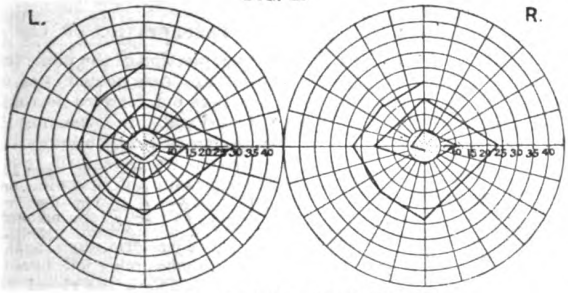
Fields for white in Case 1 (April, 1917).

lymph channels, or myelin fragmentation, are clearly possibilities to be envisaged. But, on the other hand, it must be borne in mind that the patient was unconscious for at the most three minutes, that there has been no evidence of intracranial pressure, that the absence of any form of scotoma or hemianopia is proof of the general integrity of the visual cortex, and that the visuo-psychic areas are similarly intact.

If, therefore, in the ordinary sense, there is structural integrity of the visual cortex, we are justified in associating the visual phenomena with the fact of a violent concussion over the occipital poles.

It is not forgotten that when bullets are directed against water-containing mediums, as the shooting editor of the *Field* states, they set up a hydraulic force which acts radially through the mass. The brain, however, does not respond exactly as a water-containing medium, and the reaction to a blow is not uniformly distributed throughout its mass. As Warrington says, it is most intense at the point of application and in those parts of the brain opposed to fixed points—the points of *contre-coup*. Now, in the case under consideration there is no clinical evidence to suggest a condition of *contre-coup*; hence the conclusion above stated appears to me inevitable.

FIG. 2.



Spiral fields for white in Case 1 (May 4th).

REASONS FOR NOT REGARDING THE CASE AS TRAUMATIC HYSTERIA.

An objection of another kind must next be considered. It may be said this is merely a banal case of traumatic hysteria, as helicoid and concentric diminution of the visual fields were described long ago in that neurosis and have been supposed to be pathognomonic of it. (By the way, it may be worth remarking that the existence of helicoid fields in hysteria is one of those typical statements which are copied from one text-book to another in uncritical fashion and which may be found to have little satisfactory clinical support. None of the more modern works on hysteria contain any fresh clinical instance of the condition, while some authorities do not even refer to it. It is, in short, a matter which calls for re-investigation.) But against this contention several arguments may be raised.

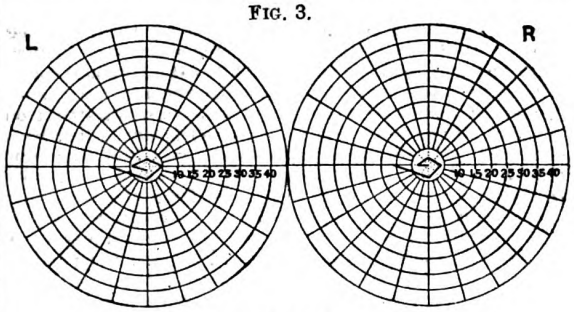
1. With the exception of the visual symptoms no impairment of function of the nervous system was discovered. Were the case, then, one of hysteria, it must fall into the category of monosymptomatic cases, which in ordinary experience are rare, but do nevertheless occur. Now concentric diminution of the visual fields has never been described as an isolated phenomenon in hysteria. Personally, I have never seen an instance of this visual defect in hysteria unaccompanied by cutaneous anæsthesia. This is in agreement with the findings of Voss[15] in his monograph, and Féré,[16] Wilbrand and Saenger,[17] and others have also stated that concentric diminution of the fields is found only in cases with some form of anæsthesia elsewhere. In face of this opinion the contention that the case is hysterical is seriously weakened.

2. The war has afforded proof, over and over again, of the fact that an interval of hours or days intervenes between the shock-producing stimulus and the development of a traumatic psychoneurosis such as hysteria. The French say "there is no hysteria in the firing line"; time must elapse, though it be measured but by hours, for subconscious complexes to be formed—"une période de méditation" is necessary, a subconscious rumination. Instance after instance of the action of this mechanism has come under my notice; it is, in fact, almost a commonplace. Now in the case under consideration the patient was struck on the back of the head, was unconscious for three minutes, and regained consciousness to find himself completely blind. In 48 hours he was beginning to improve. Being ignorant of the details of cerebral anatomy, he thought his eyes had been hit. In view of these circumstances it is maintained that to attribute his symptoms to post-traumatic auto-suggestion or other subconscious activity is unjustifiable and erroneous. The condition is physiopathic and not psychopathic.

That traumatic neurasthenic symptoms may immediately succeed a shell explosion or a direct injury, such as being buried, is recognised by all who have been working on the neurological side of the injuries of warfare, but a distinction must be drawn between neurasthenic manifestations and hysterical manifestations. Restriction of the visual fields and helicoid curves, without being in the strict sense pathognomonic, are characteristic of the latter condition. Instead, therefore, of regarding the case as one of traumatic hysteria of the monosymptomatic variety I hold that we are dealing with a true cerebral concussion, or commotio, affecting the visual system, and some at least of its value consists in the light which it throws on the mechanism of production of so-called "functional" phenomena. That is to say, so far from hysteria mimicking organic disease in this case—a process which Charcot and his pupils maintained was of common occurrence—we have here an instance of organic disease—for a concussion is an organic state—mimicking hysteria, where the symptoms produced by a violent blow, without, presumably, any gross structural change, simulate, though they are not identical with, those produced by subconscious activity.

A generation ago Hughlings Jackson asked what are the symptoms of "functional" disease of the cerebellum, and the question remains unanswered. Of the "functional" diseases of other intracranial mechanisms we are equally

FIG. 3.



Spiral fields for red in Case 1 (May 4th).

ignorant. It may be that to put the matter in this light will evoke the response that all symptoms are "disturbances of function," and that to try to distinguish between "functional disturbances" and "disturbances of function" is a mere quibble. So much the better. I believe this case may

be taken to suggest that in certain cases the outward manifestations of a minimal organic disturbance are of the type hitherto supposed to be characteristic of "functional" disease. It becomes matter for discussion whether the "shock" of a concussion may not effect a change in cortical bio-chemical activity the expression of which is comparable to the "functional" disturbance called hysteria.

CASE OF TRAUMATIC HYSTERIA.

By way of contrast, a case may be selected where, notwithstanding head injury and cerebral concussion amounting perhaps to contusion, the visual symptoms are, in my opinion, derived from another source.

CASE 2.—Sapper C. D., aged 44, was wounded at Neuve Chapelle in March, 1915. When walking down a path from the village to the trenches he was struck by fragments from a shell which exploded in his immediate vicinity, and fell unconscious. He does not remember anything till his arrival in hospital, two days later, and it is not known whether he remained unconscious all that time. He was wounded in the forehead above the right eye, the frontal bone being splintered, and above the right ear, where, apparently, the bone remained intact; there was a cut on the left upper eyelid and dirt in the left eye. When he came to he found the left eye bandaged, while the right was free. The bandage remained on for some ten days, and when it was permanently taken off he discovered that he could not see with the left eye, while the right was normal. With the left eye everything was "a blur of golden light," "like a sun with its rays pointing out in all directions," so that he could distinguish nothing. The visual condition remained unchanged till six months ago, when he noticed he could see out of a small area in the upper and outer field on the left side. This has not apparently enlarged during these six months.

On examination in March, 1917, the actual condition of the left eye was seen to be normal in all respects. The pupil reactions were normal on the two sides. The optic discs were normal and identical in colour. The double prism and "friend" tests unfortunately both proved unsatisfactory, mainly because they had been tried before and because the patient's answers were non-committal and obviously not frank. However, he was found on further examination to be "deaf" in the left ear and anæsthetic to pinprick over the left half of the body and limbs, including the left half of the tongue. (It should be added that two sisters of this patient's mother were at one time in an asylum, and both died there.)

In this case, conceivably, we are dealing with a concussion effect on the left peripheral ocular mechanism, but in view of the other symptoms it is to be placed in the category of traumatic hysteria. Notwithstanding the genuine cerebral concussion produced by the head injuries the mechanism of development of the blindness is of a different kind altogether from that of the first case.

CASE OF SO-CALLED "SUBCONSCIOUS MALINGERING."

Another case may be selected.

CASE 3.—Private H. F., aged 45, was sniping from the trenches at Zonnebeke one evening in September, 1915, when he was hit on the left side of the head and face by fragments of what he maintains was an explosive bullet, which struck some object only a few inches away from where he was standing. He fell unconscious, and remained in that state for about one hour. On coming round he discovered he was blind in both eyes, and remembers that he noted this at a time when the bandages which covered both eyes were temporarily removed. On about the tenth day after the wound the bandage was permanently taken off the right eye, and he found vision with that eye was normal again. The left eye remained covered with a shade for some more weeks, and when it too was removed he declared he was quite blind in the left eye still, and he has remained so ever since.

On examination in March, 1917, the left eye was seen to be normal in all respects, with normal pupil reactions. The optic disc was normal and identical in appearance with the right. No defect of any kind was discovered in the nervous system, either organic or "functional." With the double prism and the "friend" tests the patient was completely caught out, and the nature of his visual condition at once demonstrated.

Here, again, in spite of the general cerebral concussion, unconsciousness, and immediate blindness, the persisting visual defect is clearly seen to be of the nature of so-called "subconscious malingering." Whether the blindness noted at the outset was a concussion phenomenon is questionable, in view of the facts that the patient was not struck on the back of the head, and also that he knew he had been hit in the face and round the left eye, was told there was dirt and sand in both eyes, and remained with both bandaged for some ten days. To exclude the possibility of a peripheral concussion would be more difficult, and it is conceivable we have here a hysterical symptom erected on an existing slight organic basis. The case is quoted to illustrate this difficulty in determining whether a persisting symptom is an original symptom, as well as the further difficulty of assigning relative importance to the more or less synchronous actions of more than one etiological factor.

EFFECTS OF CEREBRAL CONCUSSION.

Some considerations arising out of the subject deserve a little attention.

It may be taken as axiomatic that every case of head injury from gunshot wounds of any kind in warfare must be associated with cerebral concussion, whether it be a cerebral contusion or something considerably less in degree. The immediate effects of concussion are generalised, in the shape of, *inter alia*, unconsciousness. The sequelæ may be localised or generalised, or both. Among the latter are headache, asthenia of cerebral type, not infrequently "cerebral irritation" as revealed by profound restlessness, inattention, and irritability.

More interesting for our purpose are localised sequelæ. Some special function of the brain may be permanently lost or impaired—e.g., a localised retrograde amnesia has not seldom been observed. Moutier[18] has recently published a record of his investigations of labyrinthine impairment of function after cerebral concussion from head injuries in warfare. In a series of 46 cases of gunshot wounds of the head no fewer than 40, i.e. 87 per cent., showed evidence of labyrinthine concussion or defect of function on objective examination, independently of the site of the injury. That so high a proportion is reached can be understood from the situation of the labyrinth, embedded in the bony framework of the cranial box.

This raises the question of the relative vulnerability to concussion of the special sense systems of the cerebrum. I have no data for taste and smell, but as far as the others are concerned, in my experience visual impairment after generalised cerebral concussion is much rarer than labyrinthine impairment, and certainly rarer than auditory impairment. It is interesting to note in this connexion that Mott[19] finds in his experience of "shell shock" cases that defects of vision are relatively uncommon as compared with deafness and hyperacusis. Probably the anatomical situation of the central visual apparatus acts as a protection, while for the same reason as the labyrinth the peripheral auditory mechanism is prone to be concussed wherever the actual head injury be.

INTERPRETATION OF VISUAL PHENOMENA IN CASE 1.

The question of the interpretation of the visual phenomena in the first case quoted is of considerable importance. The view here put forward is that symptoms usually held to be "functional" in type may be the expression of a direct visual concussion, undoubtedly an organic condition. These symptoms are concentric restriction of the visual fields and the occurrence of helicoid or spiral fields with certain tests.

1. In regard to the first of these, it must be borne in mind that such concentric diminution, supposed to be characteristic of hysteria, does certainly occur from head injuries. In the series recorded by Marie and Chatelin[14] there are two cases where the visual fields are almost identical with those obtained at the first examination in my case. In these two, however, "il s'agissait de traumatisme grave de la région occipitale atteignant les deux sphères visuelles." In many other cases, as has been already remarked, an occipital head injury is ushered in by general blindness for some days or hours: "Le syndrome de la cécité corticale relevait chèz ces blessés de commotion ou de compression de tout le territoire visuel cortical, non de destruction étendue comme dans les deux cas." Marie and Chatelin therefore regard the general blindness as due to compression or commotio, whereas by implication the constricted fields of their two cases have a different origin. In each case the patient was blind for many months, and macular vision was the first to return. Whatever be the explanation—and the authors do not venture on one—the important point is that such fields are clinically indistinguishable, as far as constriction is concerned, from those of hysteria. There is no mention of subconscious vision over the rest of the field, and it may confidently be assumed that the two patients showed none of the usual phenomena of hysteria.

Again, in the series published by Lister and Holmes[20] there is one (their Case 20) where the patient was shot through the head from side to side, above and behind the pinnæ. "Six weeks after the infliction of the wound he could only read large letters, and his visual fields were limited to a zone of about 10° around the fixation point. He was able to recognise colours by macular vision." There is no mention or suggestion of hysterical symptoms, and, of course, the organic nature of the lesion is undoubted, it being fairly certain that the optic radiations were injured. The authors state that in their opinion "the interpretation of his visual disturbance is doubtful." Here, once more, is an organic case with a visual defect of constricted fields, as in hysteria.

My case is a fourth, therefore, where a moderately severe organic lesion in the occipital region is followed first by general blindness, and subsequently by concentric diminution of the fields, in a marked degree; and, like these others, with no trace whatever of any symptom of the hysterical psychoneurosis. It differs from Marie and Chatelin's cases in the short duration of the blindness; in fact, it is a very much milder case as far as general symptoms are concerned. Lister and Holmes say that "telescopic vision" is "not uncommon in patients who have been shot through the head in the lower parietal or temporal regions," and the above case is quoted by way of illustration. They do not, however, make any suggestion as to the pathogenesis of the condition in these cases.

By way of contrast, in regard to this one point, a case recorded by Eisdell Moore[21] may be quoted. The patient was shot through the back of the head from side to side, and was at once totally blind. On the seventh day he could distinguish "large objects"; on the tenth he could count fingers (distance not specified); on the fifteenth "there was some limitation of the right field of vision." Within three weeks his fields of vision were "normal." Unfortunately, perimetric examination was not practicable. The author's comment is: "From the rapidity of recovery it is evident that blindness was due mainly to concussion, yet it seems extraordinary that a bullet could pass through both occipital lobes without causing some permanent interference with vision." It is possible, however, that a bullet might pass through the occipital lobes without injuring either the optic radiations or the area striata. Notwithstanding the incomplete record this is a case of direct occipital jarring without notably constricted fields, and without doubt most workers on the subject have seen analogous cases.

From what has been said, then, it must be conceded that in certain cases of organic injury of the central visual mechanism, by concussion or otherwise, the result is constriction of both fields, occurring by itself and without evidence of subconscious vision in the remainder.

2. I have not been able to find any reference to helicoid fields in recent war literature with the exception of a comment by the late Mr. Jessop[22] at the discussion on Shell Shock without Visible Signs of Injury at the Royal Society of Medicine. Jessop there stated he had had under his care numerous cases of temporary blindness following the explosion of shells. "The blindness lasted under a week, and generally about two or three days. Both eyes were always affected, the pupils were active to light, and the ophthalmoscopic appearances normal. The fields of vision were sometimes contracted, but more often normal: in only two cases did I find a spiral field." It is to be regretted that more details were not recorded, especially as it is not clear exactly what explanation Jessop gave of their occurrence. He said that "the windage of the shell, or in some cases *the actual blows from falling down or violence* (italics mine) affected the cortex cerebri." If this were so in the two cases specified, then undoubtedly they had for basis an organic condition, presumably a cerebral concussion or commotio (the discussion dealt solely with cases without visible injury). In the absence of further information it is idle to speculate, but the assumption is perhaps justifiable that Jessop inclined to a view of their development which was not the ordinary theory of traumatic hysteria.

The difficulty that surrounds the subject will be obvious to the reader. Under what circumstances certain side-to-side injuries of the back of the head produce constricted fields is not known‡; why my Case 1 shows the condition in typical guise, while other occipital lesions that have come under my observation, by no means dissimilar in extent or site, are not followed by such clinical symptoms, is far from clear. For the present, it appears a reasonable contention that in certain cases without permanent visual defect of the accepted organic type of hemianopia or scotoma constriction of the fields, and helicoid or spiral fields, may be the expression of an organic change, the basis of which is a violent commotio, or a concussion amounting to contusion, of the visual cortex or some part or parts of it not more closely to be specified, or of the subcortical visual projection system.

‡ Sir William Gowers held there was clinical evidence to suggest that lesions in the neighbourhood of the angular gyrus might produce amblyopia and some restriction of both visual fields, more marked in the contralateral eye, but his views have not received much support.

(*Continued at foot of next column.*)

ON SKIN-GRAFTING: A PLEA FOR ITS MORE EXTENSIVE APPLICATION.

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IT has long been recognised that after the first phase of acute bacterial infection has been satisfactorily passed, the treatment of wounds should be directed to the rapid closing of any cavity and the covering of the surface with epithelium, rather than to the killing of the bacterial flora which was the original cause of the suppuration. As illustrating the futility of attempting to keep an open wound sterile, Wright, in a recent lecture, instanced the case of burns, which, although usually at first sterile, invariably become infected later and are notoriously prone to troublesome sepsis. The importance of obtaining the rapid healing of wounds might be urged on many other grounds, some of which are so apparent as scarcely to call for mention, such as the reduction of the period of invalidism, the prevention of contractures, and the rapid restoration of function.

It will be generally agreed that the ideal procedure for this purpose is along the lines of plastic surgery; for instance, by the operation of secondary suture, or the more conservative method of drawing the edges together with adhesive plaster—the "dry suture" of the eighteenth-century surgeons.

Healing Process of Wounds: Neglect of Skin Grafts.

Most suppurating flesh wounds when treated effectively from the beginning pass after a period of one to three weeks of acute sepsis into a clean, "raw meat" stage, in which the tissues are found to be loose and supple, the surface covered with a thin layer of healthy granulations, and the bacterial flora remarkably sparse. At this stage secondary suture has, in many surgeons' hands, proved a most successful operation, extensive wounds having healed almost as if by primary union. This stage, however, is but a short one, and if operation is deferred the conditions present in the wound become much less favourable for successful suture. Cicatrisation having progressed rapidly, the tissues have become bound together and have lost their elasticity, so that it is necessary to put considerable tension on the sutures in order to bring the edges of the wound together. Further, the granulations have frequently grown redundant, leading to an increased outflow of pus and a much more abundant bacterial flora.

Many other wounds do not lend themselves to the methods of plastic surgery in consequence of the extensive loss of skin entailed by the original injury or as the result of subsequent operations undertaken to check gas infections, &c. The healing of the wounds, which, for one reason or another, are not closed at an early stage—and at present they constitute the majority of the cases—takes the tedious course familiar to all surgeons, and is particularly liable to be very protracted in its later stages.

It is not proposed here to deal with the treatment of wounds left to heal by natural processes, except in so far as

(*Continued from preceding column.*)

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to call attention to a point not perhaps generally recognised—viz., that the troublesome later stages of extensive flesh wounds, especially those complicated by considerable loss of tissue, may be frequently hastened by vigorous and repeated massage of the hard, tough mass of cicatrix.

In theory, at any rate, it ought to be possible to cut short this tedious stage of the healing process by the application of skin grafts, yet the operation seems to be commonly regarded as a last resort and is comparatively seldom practised; for, since the commencement of the war, only two short contributions to the subject have appeared in the *British Medical Journal*, and in *The Lancet* a single (although very important) letter.

On inquiring into the cause of this neglect the following factors suggest themselves:—

1. *The uncertainty of the method.*—In many surgeons' hands failures have been at least as frequent as successes, and, even when the grafts have taken, the resulting scars have been thin, weak, and prone to ulceration.

2. Anxiety to spare the patient both the immediate misery of a general anæsthetic, as well as the prolonged and serious discomfort associated at times with the healing of the raw surface from which the grafts were taken. Not unfrequently, owing to suppuration having occurred in this area, it has taken longer to heal than the wound or ulcer which was (perhaps unsuccessfully) grafted from it.

The aim of the present communication is to suggest that both these considerations may be ruled out and that the operation of skin-grafting can be placed in the position of a simple, reliable procedure worthy of very wide application in surgery. It may be boldly said that the uncertainty of the method is very largely due to imperfections of technique—in particular the technique of the after-treatment.

The literature of the subject is almost entirely occupied with recommendations of one or another type of graft and the results obtained when the operation has been successful, but very little has been written as to the conditions and causes leading to success or failure. Before discussing these latter it will be of advantage to give a synopsis of the history of skin-grafting.

Historical Synopsis: Reverdin's Method.

For almost all the original work on the subject it is necessary to look back to the period of 1870–86. Whether it originated during the Franco-German War is not clear, but, at any rate, interest in it was first aroused in Paris by the publications of J. L. Reverdin, who having observed the growth of epithelium around islets occurring spontaneously on granulating surfaces, sought to multiply such centres of growth by transplanting small epithelial grafts. These grafts he obtained from the skin over the tibia by the following procedure: Holding the skin in this situation tense, the point of a rather large bleeding lancet was thrust into the dermis, and keeping the blade as nearly as possible parallel to the surface, the point was made to emerge at a distance of 3 or 4 mm.; on continuing the pressure the small piece of skin was effectively detached by the cutting edges of the lancet.

Although commonly spoken of as "epidermic grafts," Reverdin's important communication of 1872 makes it clear that they included, at any rate at their centre, portions of the dermis, which, however, in his opinion, did not become adherent until much later than the larger epidermic portion of the graft.

Reverdin's success with these small grafts appears to have been considerable, and in the paper referred to above he summarises his experience derived from more than 50 cases, together with the publications of surgeons in different countries who had followed or modified his methods. In this paper it is shown that, at this time, grafts taken from another individual had been successfully transplanted, as was also the case when the graft was taken from a negro or an amputated limb. Moreover, the important observation had been made that if a graft was placed near the edge of the wound, or if two grafts were placed close together, a bridge of epithelium was very rapidly formed between their nearest points, whereas the epithelial border around isolated grafts, placed at a distance from the edge of the wound, extended much more slowly, tended to remain circular, and as a rule did not grow beyond the size of a sixpence.

Another remarkable feature of the epithelial islands which developed from Reverdin grafts was their comparative resistance to the morbid changes prone to occur in healed ulcers. Several cases were recorded in this paper, and also others by English surgeons, in which the breaking-down of scars involved all the epithelium formed from the margins of a wound but spared that in the immediate neighbourhood of former grafts. With this in view Reverdin suggested that many more grafts than were generally employed might be with advantage placed on the granulating surface.

As regards histological observations, the most important were made at a somewhat later date by Thiersch, who transplanted Reverdin's grafts on to a limb at varying intervals previous to its amputation. He was able to determine by injection of the main vessels of the amputated limb that vascularisation of the graft had already commenced within 18 hours of its being transplanted on to a granulating surface.

Modifications of Reverdin's Method.

Although Reverdin does not appear to have departed from his original method, other surgeons were not slow to attempt modifications of it. Nelson Dobson, of Bristol, with the idea of making the small epidermic grafts go farther, cut them up on his thumbnail into five or even ten fragments, thereby hoping to multiply the centres of growth. He also, with the view of giving such minute fragments a better chance of "taking," inserted them into small incisions made in the granulations.

The "section grafts" described a little later in the present paper represent a further development of Dobson's procedure.

Fiddes, of Aberdeen, and Marc Sée, of Paris, carried the idea of economy still farther, their procedure being to sow the granulating surface with the tiny collection of cells obtained by merely scraping an area of skin. This method of "epithelial sowing" may be of theoretical interest, but the resulting scars would probably be of the worst type.

With the exception of these two methods all the important modifications of Reverdin's operation have taken the direction of larger grafts.

Several of the English surgeons (who were first to follow Reverdin's lead) preferred forceps and scissors (or scalpel) to the bleeding lancet for removal of the grafts, with the result that these tended to be larger and also thicker than the thin, mainly epidermic, type recommended by Reverdin. These somewhat larger grafts were found to adhere just as readily on a satisfactory surface as the smaller ones, and it was pointed out by Steele, of Bristol, that when treating ulcers which, after healing, would be subjected to great strain and likely to break down, it would be advantageous to transplant a number of fair-sized portions which would certainly retain their elasticity, and so by their individual stretching relieve the tension of the whole surface. This surgeon speaks of his grafts as including the whole thickness of the true skin but none of the fat and areolar tissue, their size varying from that of a large pea to a threepenny-piece, or occasionally even larger. Such grafts were manifestly very different from Reverdin's, and although their actual dimensions would naturally vary slightly in practice it would seem justifiable as well as convenient to use the term "Steele's grafts" in referring to this type, as the present authors will have occasion to do. The fact that these grafts were not generally adopted, and so came to be forgotten, may well have been due to the pain caused by cutting them. The same consideration was probably responsible for the fact that all grafting operations in those days were of very modest proportions—more than ten grafts at a sitting being rarely recorded, the more usual number being three to six.

When, after a few years, anæsthesia came into more general use, Wolfe, of Glasgow, employed what were in reality very large Steele grafts for correcting severe ectropion, &c. What constituted this method a new procedure was really the idea of covering the entire surface to be grafted rather than establishing centres of growth. For this purpose Wolfe dissected off from the patient's arm a piece of skin of the required size—up to 2 or 4 square cm.—carefully avoiding the fat and areolar tissue. In this last detail his flap grafts differed from those which had been employed in India during the eighteenth century.

A later paper by Wolfe suggested that this method might have a wider application in surgery, but it was not apparently taken up until 1893, when Krause put forward the view that such grafts would furnish stronger and more elastic

scars than those resulting from Thiersch's method, which had at that time been in favour for several years. Success, however, seems to have been limited to cases in which the grafts were transplanted on to aseptic wounds, and Wolfe's method has never come into general use for covering granulating surfaces.

Thiersch's Mode of Skin Grafting.

Thiersch's procedure, described by him in 1886, resembled Wolfe's in that it aimed at covering the whole surface to be grafted, but in respect of technique was quite different, the grafts being cut very thin by means of a razor, including only epidermal tissues, and being planted, not directly on the granulations, but on the raw surface from which these had been previously pared away. With the exception of this latter practice of paring away the granulations, Thiersch's method has been more extensively employed than any other during the past 30 years, the work of Reverdin and his followers being almost forgotten. A general anæsthetic, however, has almost invariably been considered necessary for cutting Thiersch grafts, and this circumstance has gone far towards limiting its application to the treatment of very large granulating surfaces. (The need for a general anæsthetic may, however, be called in question, Nystroem, Laewens, and others (1909–1911) having reported that they obtained satisfactory anæsthesia by nerve blocking with novocain, while more recently Pearce Gould and Archer have advocated infiltration anæsthesia for this purpose.)

It will be pointed out later that the uncertainty of results obtained by Thiersch grafting has been chiefly due to imperfections in the technique of the after-treatment, but the large size of these grafts may well be an additional special factor, for, covering as they do a considerable area of granulations with many pits and crevices, they tend inevitably to imprison the discharges, which, by liberating tryptic ferments, digest not only the epithelial outgrowths but ultimately also the actual grafts. To prevent this disaster it has sometimes been recommended that holes should be punched in the grafts.

Other disadvantages of the method have already been mentioned above—namely, the possibility of troublesome sepsis during the healing of the large raw surface from which the grafts were taken; and, finally, most important of all, the inelastic, vulnerable character of many of the resulting scars.

In recent years there has been, in America at least, a return to Reverdin's method, the claim being made by Cotton and Ehrenfried (1909) and by Davis (1914) that, except in cosmetic effect, this procedure gave better and more certain results than Thiersch's method. The grafts employed by these surgeons were obtained by under-cutting with a scalpel little pimples of skin raised on the point of a needle. In size they did not as a rule exceed 3 mm. in diameter, larger grafts being considered less satisfactory.

Viability of Skin.

Lastly, it is necessary to refer to a very important and original communication by Carrel in 1912. He obtained a number of grafts, consisting of the whole thickness of the skin without any of the underlying fat and areolar tissue from a healthy fœtus, which had died during labour, and preserved them in liquid paraffin at + 3° C. After 42 days he found the skin to be normal in appearance, both macroscopically and microscopically, and even after six months their appearance had not markedly changed. At intervals their viability was tested by transplanting portions on to granulating surfaces, with the result that, even up to seven weeks after their removal, some of the grafts "took."

Although, as pointed out above, it has long been established that grafts from one individual may be successfully transplanted, the general experience has been that they are not as a whole so satisfactory as autodermic grafts; notwithstanding this, Carrel's findings, if confirmed, open up new possibilities.

Description of Authors' Method.

The routine procedure worked out by the present authors may now be described in full, since it differs in several respects from the methods usually adopted in the past, the difference tending, it is hoped, towards simplicity and more constant results. The grafting operation, including the method of obtaining local anæsthesia, will first be dealt with; secondly, the after treatment; and, fina ly, the results obtained.

Anæsthesia.

Local anæsthesia induced by blocking certain nerves of the thigh with novocain has been almost invariably employed. If an insensitive area of only moderate size is required the external cutaneous nerves alone are blocked, and about 15 minutes later some 20 to 30 Steele's grafts may be taken without the patient suffering any pain from an oblong area of skin usually about 12 by 20 cm. in measurement situated on the antero-external aspect of the thigh. (Fig. 1, A.) If a larger anæsthetic area is required the anterior crural nerve is also blocked, when the area shown in Fig. 1, B, is rendered insensitive. The technique employed has been substantially that of Nystroem and Laewens; a 2 per cent. solution of novocain with a small amount of adrenalin (1 in 50,000) is the anæsthetic used.

FIG. 1.



The area A represents the size of the anæsthetic patch obtained by blocking the external cutaneous nerves. When the anterior crural nerve is also blocked the further area B is rendered anæsthetic. (The anæsthetic area below the knee has not been indicated as all the grafts have been taken from the thigh.) At C is indicated the point of insertion of the needle for blocking the external cutaneous nerves and also the area to be infiltrated. At D is indicated the point of insertion of the needle for blocking the anterior crural nerve.

To block the external cutaneous nerve the needle is introduced a little below and to the inner side of the anterior superior iliac spine; the tissues both above and below the deep fascia are now infiltrated, the needle being thrust downwards, inwards, and also outwards from the point where it was inserted. The area thus infiltrated is indicated in Fig. 1, C. About 5 c.c. of the novocain-adrenalin solution is used.

The blocking of the anterior crural nerve is much more difficult and requires a strict attention to anatomical landmarks. It will be found an advantage to mark out with a skin pencil (i.) the line of Poupart's ligament, (ii.) the common femoral artery, which enters the thigh midway between the symphysis pubis and the anterior superior iliac spine, and (iii.) a point, barely 1 cm. outside the artery and midway between the spine of the pubis and the inner border of the anterior superior iliac spine; at this point the nerve passes below Poupart's ligament, and to reach it the needle should be inserted vertically not more than 1 cm. below the ligament since the nerve divides at about that level. The nerve usually lies at a depth of 0·5 to 1 cm. below the fascia. When the needle reaches the nerve pain is experienced by the patient, shooting down to the knee, and the quadriceps will sometimes (but not invariably) twitch. Five cubic centimetres of the novocain solution should be injected around the nerve, and, if possible, partly into the sheath.

The authors' experience of this method of inducing anæsthesia is limited to between 20 and 30 skin-grafting operations, and in only one of these—a very nervous individual—was the degree of anæsthesia so light and its duration so short as to be unsatisfactory. As a rule, perfect anæsthesia lasted for three-quarters of an hour and often longer, the patients being quite undisturbed by the removal of the grafts and the sewing up of the little wounds.

When, instead of Steele's grafts, a strip of skin is removed as described below to provide "section" grafts, it has been found more convenient to employ infiltration anæsthesia than nerve blocking.

For this purpose a 0·5 per cent. novocain solution, to which 1 in 50,000 adrenalin has been added, is injected into the subcutaneous tissue along two parallel lines of the desired length, about 1·5 cm. apart. An oblong anæsthetic area about 3 cm. wide is thus obtained.

The viability of the grafts taken from such an infiltrated area is not in any way impaired.

The Grafting Operation.

The cutting of the grafts is carried out as follows:—

By taking a superficial but firm hold of the surface with towel-holding forceps* a small cone of skin is raised; it is then extremely easy, by cutting horizontally through the base of the cone with a scalpel, to remove roughly circular grafts of 6 to 12 mm. in diameter, whose cut surface includes, from edge to centre, the epidermis and most of

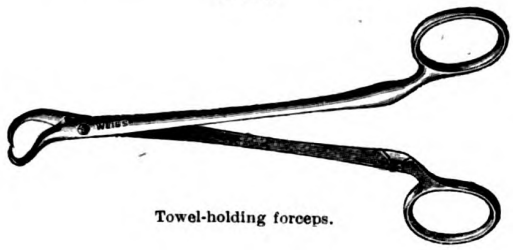
* As a matter of fact the instrument used, although similar to towel-holding forceps in design and often used as such, is listed in Weiss's catalogue as Backhaus's basting forceps (Fig. 2). The points should be sharp and should meet accurately where they slightly overlap. If this is attended to and the joint kept tight there will be no need to take a deep bite into the skin when lifting it. (The points ould be more strictly parallel than is shown in the figure.)

the dermis, but none of the fatty areolar tissues. Very little practice is needed to obtain grafts of nearly uniform size and thickness.

While still held on the forceps the graft is transferred to its destined position on the wound and there carefully flattened out by means of any simple blunt instrument.

After releasing each graft on the wound the points of the towel-holding forceps are dipped into an antiseptic solution

FIG. 2.



Towel-holding forceps.

in order to avoid the possibility of carrying organisms into the small aseptic wounds from which the grafts were taken. These little wounds in turn are each closed with a single, shallow stitch and the whole area covered with gauze and collodion. It is advisable to leave the stitches in place for from 10 to 12 days.

The disposal of the grafts on the wound is a matter of considerable importance. Reverdin's observation that epithelium spreads much more quickly either between the edge of the wound and a graft, or between two grafts when the interval is not more than 8 mm., than around isolated grafts is constantly being confirmed.

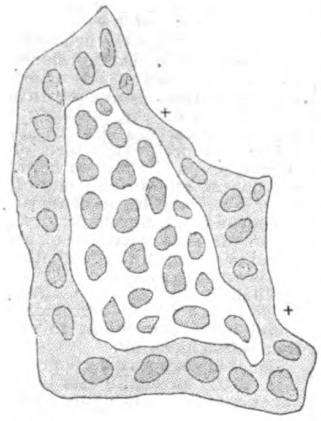
This fact was also strikingly demonstrated by the experimental work of Carrel, who showed that (1) the rate of epithelial growth over an aseptic or almost aseptic surface was inversely proportional to the size of the wound and had no connexion with its age; (2) when the interval between the epithelial edges was more than 10 to 15 mm. the spread of the epithelial edge was very slow, while the growth became quicker and quicker as the edges approached one another.

FIG. 3.



Outline of a wound on the front of the thigh (T. S.) to show disposition of Steele's grafts taken from the other thigh. Every graft "took" perfectly and the surface was entirely covered with epithelium on the fourteenth day after grafting. (From a tracing on thin sheet celluloid.)

FIG. 4.



Tracing of wound on front of upper arm (J. R. H.) to illustrate grafting in two stages. The shaded border shows the new epithelium formed within 12 days about the grafts transplanted at the first operation. Two, out of 22, failed to "take" on that occasion—hence the narrower border at the points marked +. On the twelfth day after the first operation 21 more grafts were transplanted, as shown, on the unhealed centre of the wound; every graft "took" perfectly, with the result that the wound was entirely covered with epithelium on the twenty-second day after the first operation.

These tracings, as well as Fig. 5, are reproduced at half scale.

This and other considerations have led the authors to formulate the following rules:—

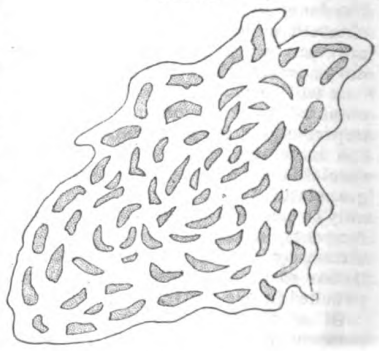
I. Whenever possible the grafts should be arranged over the whole surface of the wound as near together as is shown in Fig. 3 or even somewhat closer.

II. If the wound is so large that too many grafts would be required to cover it at a single operation one or two rows should be first placed round the edge, and about 12 days later, when these are well incorporated into the growing edge, the remaining surface should be grafted. Fig. 4 illustrates a case treated in this way.

Another method, to which the term "section grafting" has been applied, deserves to be further tried for the grafting of large wounds, and may here be described. Its particular merits are that it is very economical of skin and leaves no raw area to heal.

An elliptical strip of skin from 5 to 10 cm. long and about 1 cm. wide is dissected off an area of the thigh or arm anæsthetised by infiltration with novocain solution. In doing this care should be taken to avoid including the subcutaneous fat, and any of this found adherent to the strip after its removal should be carefully pared away. The strip is now divided with scissors into thin vertical sections, which are placed in warm Locke's solution and then transferred to the wound, being disposed on it, as suggested above in the case of the round grafts. Fig. 5 shows the appearance and arrangement of such grafts on a wound. The wound from which the skin was taken is in due course closed with sutures.

FIG. 5.



Tracing of wound of back of thigh (C. C.) to illustrate the use of "section grafts." This method was used in this case because some 35 Steele's grafts had previously been taken from the patient's other thigh under local anæsthesia, so that there was not a very large area of skin to draw upon. The 63 sections were obtained by cutting up a strip of skin 9 cm. long by 1·5 cm. wide, taken under local anæsthesia. It will be noticed that the grafts next the edge are placed "lengthwise on."

It will be evident that, if this method of grafting proves generally successful, as the authors' cases suggest that it well may, by a refinement of the technique of cutting up the strip of skin, such as a method of embedding without impairing the viability of the tissues, a very small piece of skin could be made to furnish grafts sufficient to cover a very large granulating surface. It is probable, however, that the scars resulting from such thin grafts would, like those resulting from Thiersch's grafts, prove unduly susceptible to slight injuries and trophic ulceration.

In one case a small piece of skin was frozen and cut with a microtome into thick sections, which were then placed on the granulating surface. The result, however, was most unsatisfactory, none of the grafts becoming adherent.

After Treatment.

Grafts newly placed on a wound are exposed to two chief dangers: (1) that of mechanical disturbance before they have become firmly adherent; (2) that of accumulation of pus, which, by the liberation of tryptic ferments, leads to the digestion and disintegration of the epithelial tissues.

Various devices have been employed to protect the grafts from the first of these dangers—e.g., by strips of rubber, of diachylon or zinc plaster, by sheets of oiled silk, or wire filigree, and latterly, with more success, by wool and canvas fabrics coated with some non-absorbent substance such as wax or rubber; from time to time also it has been recommended to use no dressing at all in contact with the grafts.

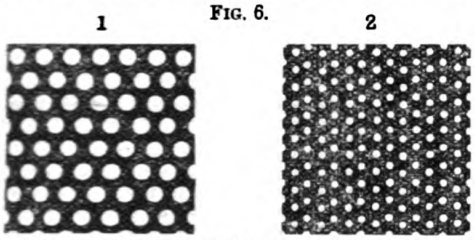
Whichever of these methods has been adopted the wounds have almost invariably been left undisturbed for several days on the ground that any change of dressing would be perilous to the immobility of the grafts. It is this practice which, in the authors' opinion, has contributed more than any other factor to the failure of skin-grafting operations, for it has only averted the one danger—movement of the grafts—at the cost of greatly increasing the other—the tryptic action of the pus.

In attempting to develop a plan of after-treatment which should protect the grafts from both these dangers search had first to be made for a material which would accurately fit

the irregularities of the wound, hold the grafts securely in position, and at the same time allow of the perfectly free escape of any discharge.

The thin celluloid previously introduced by one of the authors (S. R. D.) was first tried, but was found to be suitable only when the grafted surface was perfectly flat. Various oiled silks and similar fabrics perforated by hand were tried and proved much more suitable; finally, Messrs. Maw, Son and Sons, learning what was required, produced the excellent material depicted in Fig. 6 under the name of

FIG. 6.



"Perforated Parex Protective" (Maw, Son, and Sons, Limited). Size of perforations as shown. (1) will be found most suitable for covering Steele's grafts; (2) for covering "section grafts."

"Perforated Parex Protective." This is simply an oiled fabric suitably perforated; it is strong, durable, and can be boiled; it is sufficiently supple to follow the irregularities of the wound, adheres lightly to the surrounding normal skin, but hardly at all to the granulations or the grafts. Contact with strong alkaline or carbolic acid solutions spoil it.†

When a layer of this material is placed between the grafted surface and the outer dressings it has proved perfectly feasible and safe to change the latter every day following the operation provided these dressings have kept moist. Except in the case of the few wounds which have practically no discharge such a daily change of dressing is not only advisable but indispensable for successful grafting.

Locke's solution,‡ as representing most nearly the blood fluids, is used for cleansing the wound both at the time of operation and also at the daily dressings. Ringer's solution might prove equally suitable, and, failing it, normal salt solution should be used.

Detailed Description of the Routine Dressings.

When the grafts are all in position on the wound the surface is moistened with a fine spray of Locke's solution. The Parex protective is now applied, and should be cut large enough to cover a fairly wide border of healthy skin around the wound, to which it is securely fixed with adhesive plaster. In the case of wounds of the limbs, especially those on dependent surfaces, one or more strands of thread tied round the limb over the protective will help to maintain it in more perfect apposition to the grafted surface.

For the outer dressing a roller of butter muslin—not more than double-fold in thickness—is soaked in hot Locke's solution and applied wringing wet by unrolling it to and fro over the wound so as to cover the surface with many thicknesses, which are finally fixed in place by carrying the roller firmly round the limb and securing it with a safety-pin. Over this an amply large sheet of good quality oiled paper is placed; in the case of a limb it should be large enough to wrap right round and overlap by a wide margin. Usually no wool is applied outside this, but it is important that the outer bandage should be firm enough to bind the oiled paper closely to the skin, for in this way evaporation is prevented and the butter muslin retains its moisture for at least 24 hours.

Whenever, as in the case of wounds of the trunk, it is difficult to maintain the oiled paper in such perfect apposition to the skin as to prevent evaporation, it will be found advisable to insert a Carrel's tube, through which a small quantity of Locke's solution is injected at suitable intervals. The type of Carrel's tube used for this purpose consists of a rather fine rubber tube which is coiled amongst the folds of the butter muslin, one end being brought out through the oiled paper and bandage, the other being closed with a ligature and the sides perforated for some 25 cm. with small holes. Through the open end lying outside the bandages the Locke's solution is injected with a syringe.

† This material has also largely supplanted the use of the thin perforated celluloid in the dressing of other types of wounds for the purpose of preventing the sticking of the dressings to such painful surfaces as those occurring after circular amputations, &c. The thicker sheets of celluloid still furnish the best material for the support of limbs in connexion with skeleton splints.

‡ Locke's solution contains, in a litre of distilled water, sodium bicarbonate 0·15 gm., calcium chloride 0·24 gm., potassium chloride 0·42 gm., glucose 1·0 gm., sodium chloride 9·2 gm.

Finally, a simple splint is applied if this will assist in keeping the part at rest or prevent the dressings being disturbed by pressure on the bed or by movements of the patient.

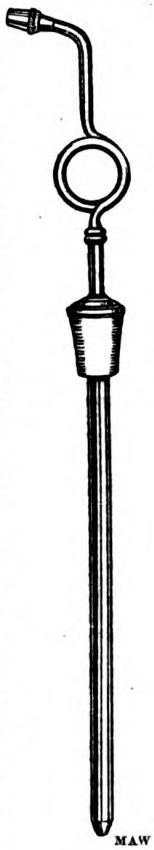
At each daily dressing for a week following the operation the oiled paper is removed, the butter muslin well soaked with Locke's solution by means of a spray, and then removed layer by layer (not turned back *en masse*), the protective being carefully held down by forceps if there is the slightest tendency for its separating from the grafted surface; this, however, is unlikely to occur if the dressings have been kept moist.

The wound may be now thoroughly washed with a fine spray owing to the abundant perforations of the protective, without any risk of disturbing the grafts. Butter muslin soaked in warm Locke's solution is then reapplied as before.

The use of the spray for this purpose, and also in dressing many other wounds, has, in the authors' hands, proved so efficient, as well as economical, as to justify a short note.

The type of spray used is shown in Fig. 7. It is of very simple construction throughout, having one ball valve, which gives no trouble unless allowed to rust, and one of thin leather, which is very easily replaced. On account of this leather washer the spray should not be boiled, but may be readily sterilised by immersion in, and filling with, 5 per cent. carbolic acid solution.

FIG. 7.



A bottle of each lotion in common use may conveniently be fitted with a separate spray and carried from case to case, there being no necessity for resterilisation of the instrument if ordinary precautions are taken to prevent fouling it. The spray delivered by this simple apparatus will be found to cleanse the large wounds at present so common more quickly and effectively, and at the same time with much less discomfort to the patient than the time-honoured, but often very inefficient, glass syringe.

After about a week the protective is removed to determine the exact condition of the grafts, but it is advisable to continue its use for a further period of two or three days in order to save the young epithelium from any possible injury through direct contact with the outer dressings. At this stage, or even some days earlier, Locke's solution has in some cases been replaced by a 0·1 per cent. solution of brilliant green in distilled water, on the ground that this latter solution is said to favour the growth of epithelium, and certainly assists in keeping a granulating surface bacteriologically clean.

While this paper was being written the authors' attention was directed to a letter in THE LANCET of June 3rd, 1916, by Hagmann, a surgeon of Moscow, describing the after-treatment he adopts. This includes, although Hagmann does not emphasise the importance of it, a daily wet dressing, normal salt solution being the fluid used. His grafts were kept in place by a larged-meshed canvas, such as is used for wool work, coated with paraffin wax. With this method of after-treatment, which closely resembles that worked out independently by the present authors, Hagmann states that he has grafted more than 20 wounds without losing a single graft.

Results Obtained.

With regard to the methods described above in detail, it will be asked: (1) In what circumstances, and how often, have the grafts been found to "take"? (2) What has been their subsequent history and what is the character of the resulting scars?

The cases grafted during the period covered by this investigation were drawn from a series of 63 severely wounded men under treatment in the Medical Research Committee's wards of the Inoculation Department at St. Mary's Hospital. With such a small number to choose from, it will be seen that no selection of especially suitable wounds could be made—as a matter of fact, several of the wounds were distinctly unfavourable.

Following the nomenclature employed by certain American authors, the term "autodermic grafts" is used to signify grafts taken from the individual to whom they are applied, while "isodermic grafts" is used when the grafts are taken from another individual or an amputated limb, &c.

The total number of transplantation operations was 33. Of these, in 29 the grafts employed were of Steele's type, 22 being autodermic and 7 isodermic. In the remaining 4 operations section grafts (autodermic) were used. It was usually easy to determine the exact number of grafts which became adherent, so that the success or failure of the operations—in that respect, at any rate—may be expressed in a roughly quantitative manner.

Autodermic Steele's grafts.—The results obtained with this type were as follows: Of the grafts employed—

80 to 100 per cent. became adherent in 12 out of the 22 cases.								
40	80	,,	,,	,,	7	,,	22	,,
5	15	,,	,,	,,	2	,,	22	,,

In the remaining case the result was a complete failure.

These results, although satisfactory, do not really represent the standard of success which could be attained if the cases were selected; some of the cases having been grafted simply to ascertain the limits of the operation, while in others the operation was carried out before the full technique had been developed.

The progress of the grafted wounds and of the grafts themselves has usually been uneventful.

Cases have differed in the rapidity with which the epithelium has spread between the grafts, but once formed it has rarely broken down. The rapidity of sound healing and the strength of the scar seem to be directly proportional to the proximity of the grafts to each other.

In one case only have autodermic grafts been observed to shrink and disappear after they had become securely adherent.

This occurred in a large wound of the buttock which was discharging more freely than any of the other wounds grafted; moreover, the grafts in this case had been disposed indiscriminately over the wound, the authors at that time not having recognised the importance of placing the grafts near the growing edge and in proximity to one another. Of the 50 grafts applied in this case only 23 became adherent, and of these latter but 6 or 7, being those more favourably placed, ultimately survived.

For several months, and probably much longer, the grafts remain clearly visible, standing out from the surrounding scar as opaque areas of normal skin. Although the authors' experience has not been sufficient, nor the period of observation long enough to permit of a well-founded judgment, first impressions are very favourable to the scars resulting from Steele's grafts.

It has occasionally been noticed that in certain grafted wounds, just as in the case of ungrafted wounds, the marginal epithelium previously formed has shown a tendency to break down, but this ulcerative process has not extended to the grafts nor to the epithelium formed around them, which appears to be, for some unexplained reason, more resistant. This confirms the similar observations published by Reverdin.

As to the later stages, it has already been stated that the grafts appear but little changed at the end of six months, and from the literature this seems to be also true of much longer periods. Each of these areas having the appearance of normal skin undoubtedly constitutes, as claimed by Steele, a strong point in the scar, having much more elasticity and also affording a thicker protective covering of compact tissues than is present in naturally formed scars. Moreover, the scars resulting from Steele's grafts have seemed less adherent to the deeper structures.

Isodermic Steele's grafts.—Grafts taken from amputated legs furnished the material for seven transplantation operations, the average number of grafts employed being about 83.

Four limbs were used, all of which had been amputated for injuries received several days or weeks before, and although each presented one or more suppurating wounds there was also an area of approximately healthy skin from which it was judged legitimate to take the grafts. Cultures were made from the cut surface of the grafts taken from each limb and proved sterile. This was of particular interest in the case of one limb which for two months had been the seat of very extensive septic infection, leading to constant fouling of the healthy skin with pus.

It will be agreed that grafts from such a source were not very promising material; they were transplanted in these cases rather with a view to ascertaining the limits of their usefulness than in the expectation of success. The following procedure was adopted for taking them.

Having been kept in a moist cloth until required, the limb was suspended with the severed end downwards; it was then thoroughly washed with soap and an antiseptic solution, the cut surface was roughly sewn up in order to make the skin taut and so facilitate the cutting of grafts in the manner described above under the heading of "The Grafting Operation."

As to the length of time which it is permissible to keep the limb before use, it can only be said here that some 200 successful grafts were taken on one occasion 16 hours after the amputation, the limb having been kept meanwhile at room temperature (in May).§ In five of the remaining six cases the grafts were removed within six hours of amputation and applied at once to the wound—in the sixth case they were also taken within six hours, but kept in Locke's solution at about +6° C. until the following day when they were successfully grafted upon an amputation stump.

It appears to be quite unnecessary to transfer the grafts directly from the limb to the wound, and is certainly far more convenient to cut them elsewhere and convey them to the bedside in warm Locke's solution.

The results obtained with these grafts have been, on the whole, surprisingly good.

On six of the seven wounds to which they were applied 80 per cent. or more of the grafts "took"; in the remaining case, that of a very unsatisfactory wound, the result was very poor, only three or four grafts gaining a hold temporarily.

The cases grafted in this way have been too few and the period of observation too short to show what is the subsequent history of these grafts; up to the present, however, they have given the impression of being somewhat less satisfactory than autodermic grafts. As compared with the latter the epithelial attachment of the isodermic grafts to the granulations has seemed looser, a certain number of them coming away after having been adherent for a week or so, and others standing off the surface at first, with the appearance rather of ragged pieces of false membrane than of healthy grafts; moreover, the spread of epithelium around the isodermic grafts has often been slower than usual, although ultimately they have become consolidated so as to form a firm scar.

With these qualifications it may certainly be said that the use of isodermic grafts in some circumstances is well worth while—e.g., in the case of wounds so large that sufficient autodermic grafts cannot possibly be obtained.

One of the seven cases treated was of such a kind—a burn of the third degree, extending from the iliac crest to a short distance above the ankle and involving more than three-quarters of the circumference of the thigh and leg. Although healing is still far from complete, very large parts of this surface have been covered by two applications of isodermic grafts to the number of about 400 and numerous small centres of growth have also been established.

The results obtained in this case alone prompt the suggestion that the opportunity afforded by an amputation should never be lost when there are large wounds to heal. Whenever possible a Wassermann test of the patient whose limb is to give the grafts should be performed.

Section grafts.—These have been tried in four cases only, the skin being always taken from the patient. A short description of each case is here given.

No. 1. A large wound on the front of the thigh, part of which was grafted with "section" grafts, the remainder with Steele's grafts. The result was that practically all the grafts "took," and the whole wound was soon completely healed.

No. 2. A small granulating surface on an amputation stump; the wound had been previously grafted round the edge with Steele's grafts. Again the result was almost perfect, as about 90 per cent. of the grafts "took," and the whole surface was healed in a few days.

No. 3. A large wound over the popliteal space and a small one over the great trochanter. The patient at the time of the operation had fever and his general condition was not at all good. Two sinuses at the upper end of the grafted wound were discharging pus, and although this was not allowed to come into contact with the grafts the suppuration may have exercised an indirect effect upon the result.

None of the "sections" in this case became adherent, but after 10 to 14 days many delicate points of epithelial growth were noticed on the area where the grafts had been placed, and these quickly spread, causing the wound to heal more rapidly than it would otherwise have done.

The failure of these grafts to become adherent may well have been due to the fact that the limb was not slung after the operation, for, the wound being on the back of the thigh, the dressings must inevitably have rubbed upon the bed and the grafts been more or less disturbed.

No. 4. A wound over the popliteal space, the extent of which is shown in Fig. 5. The wound surface in this case has never been entirely satisfactory, although at the time of grafting it had improved to some extent; one point which was always very noticeable was its extreme sensitiveness, a condition so foreign to the healthy granulating wound as to suggest some slight nerve injury. Three or four days after the grafting there was an increase in the amount of the discharge.

The result of the grafting in this case was again unsatisfactory, as all the grafts were digested by the tryptic action of the pus, but not before about 40 per cent. of them had established small delicate flakes of epithelium, a few of which persisted and afterwards spread, leading to some diminution in the size of the wound.

These cases, although few in number, indicate that this method of grafting is worthy of an extended trial, for the

§ More recently a number of grafts have been successfully transplanted from a limb 28 hours after its amputation.

result in two out of the four cases was quite perfect, and in the other two, although the grafts themselves did not "take," so many islands of epithelium were left on the surface as to considerably hasten the healing of the wound; similar islands of epithelium have also sometimes appeared where Steele's grafts have been applied and failed to adhere.

Remarks on the Conditions of the Wounds which Favour or, as the case may be, are Opposed to Successful Grafting.

There is at present no definite criterion by which a wound surface may be judged as favourable for the operation of grafting.

The authors have supplemented naked-eye observation by film preparations of the discharge. If the bacteria are few in number and chiefly intracellular this is held to confirm the opinion that the wound is suitable for grafting. In a series of cases cultures as well as films were made just before the operation in order to determine whether any particular types of bacteria were specially inimical to the grafts. Staphylococci, diphtheroid bacilli, and *B. pyocyaneus* were the types most commonly present, and although these observations did not show it conclusively, the impression was gained that *B. pyocyaneus* tended to be more harmful than any of the other micro-organisms found.

As regards naked-eye appearances, the most favourable type of wound to graft is one which, on the removal of the dressing, shows a perfectly clean, flat surface covered with small bright-red granulations, quite painless on being touched, and having at the periphery an actively growing epithelial edge; the amount of pus discharged from this type of wound is usually very small.

A less perfect type of wound for grafting, and, unfortunately, a more common one, is that on which the granulations are coarser, paler in colour, less firm, tending to be oedematous and to bleed on the slightest touch; from such wounds the discharge is invariably more abundant.

Frequently this latter type of wound can be brought nearer to the first-mentioned type by the application, for a day or two, of pressure combined with a nitrate of silver, zinc sulphate, or brilliant green lotion.

A wet dressing of 0·1 per cent. brilliant green, enclosed in oiled paper and firmly bandaged, has proved perhaps more valuable than any other in preparing surfaces for grafting, and since, as has been mentioned above, it stimulates the growth of epithelium as well as keeping down the bacterial flora, it has also been used with success in place of Locke's solution a few days *after* the grafting operation.

It may here be mentioned that in a single case a 1 in 2000 solution of flavine was employed on a somewhat unsatisfactory wound surface which it was desired to graft for the second time. Whether due to the flavine or some other cause the result was disastrous, for within three days of its application all the grafts previously transplanted round the edges and the new epithelial border which had formed about them had disappeared. During the same time the bacterial flora changed from a very few *B. pyocyaneus* to many streptococci.

It will be found that by using some such method of preparation of the wound, together with the grafting operation and after-treatment described above, the number of wounds which may be grafted with success is greatly increased, since a moderate amount of discharge, containing but few microbes, will not suffice to digest the grafts when it is daily removed by dressing the wound. Moreover, it has proved perfectly feasible, by division of the dressings, to graft one part of a large wound where the surface is favourable, while in the other part, owing to the persistence of a sinus, too much pus is present. This was done on two occasions with complete success for a large wound on the outer side of the elbow complicated with a compound fracture of the ulna, and healing was thereby hastened by several weeks.

Apart from actually "septic" surfaces, perhaps the most unfavourable surface to graft is that resulting from a large wound complicated with the loss of much tissue. After many weeks of filling up and contracting such a wound shows a surface covered with pale granulations which rest on a dense mass of scar tissue. The worst results of the authors' series occurred with wounds of this type, on one occasion only one graft holding, on the other none.

The last point to be considered is, At what time should the grafting operation be carried out?

From clinical observation it is well known that large granulating wounds rapidly contract in size during the early period of the healing process, and although this contraction may at times be advantageous, at other times it causes any but desirable results, this being especially the case when the wound is in the neighbourhood of a joint or in the region of the face. Further, from similar observations it appears probable that once a wound is covered with epithelium the formation and contraction of scar tissue ceases.

These clinical observations have been strikingly confirmed by the experimental work of Carrel, by which he has demonstrated that (1) the amount and rapidity of the contraction in a wound depends on its size, the larger the wound the greater and more rapid the contraction; (2) the contraction is much more rapid in the early stages of the healing process and in the later stages it tends more and more to become stationary; (3) the contraction entirely ceases as soon as the surface is covered with epithelium; (4) after the healing is complete the cicatrix tends to enlarge.

From these results it will be seen that the correct time for grafting a wound will depend largely upon its situation. Thus if the wound is so situated that any contraction of the scar would tend to limit the movements of a joint, or by pulling on the surrounding soft parts cause some deformity, as in the facial region, it is obviously of paramount importance to obtain an epithelial covering as early as possible; if, on the other hand, the contraction of the granulation tissue tends only to lessen the size of the raw surface without causing any deformity or other disadvantage the grafting operation should be delayed until this process slows down, but the delay should not be prolonged to that stage when, from the contraction of the deep scar tissue, the wound surface becomes unfavourable for the reception of the grafts.

Summary and Conclusions.

In 1869 Reverdin introduced the method of implanting tiny portions of skin upon granulating surfaces to serve as centres of growth.

Steele in 1870 improved upon this by cutting the grafts rather larger and thicker in order to obtain stronger and more elastic scars. His grafts varied in size from the diameter of a pea to that of a threepenny-piece or even larger.

Both of these methods appear to have been widely practised and with considerable success. They were given up, however, in course of time because of the more rapid and striking results sometimes achieved with the method introduced later by Thiersch, which aimed at covering the entire wound surface with grafts at a single operation.

The Thiersch method, in turn, was found to have serious disadvantages; in particular, the adhering of the grafts was uncertain, and the scars resulting from it were often unsatisfactory. Recognition of these drawbacks and forgetfulness of the older methods has resulted in the operation of skin-grafting being now seldom practised, in spite of the great opportunity at present afforded to make use of it.

The authors have revived the use of Steele's grafts and introduced certain new features into both the grafting operation and the after-treatment, which aim at making the transplantation of skin a simple, reliable procedure.

With respect to the grafting operation the chief new, or at least unusual, features are: (1) the use of local anæsthesia induced by nerve blocking; (2) the suture of each of the raw surfaces left after removal of the grafts.

With regard to after-treatment the authors have been influenced by the recognition of the important part played by the tryptic action of pus, which recent work has explained and emphasised. There is little doubt that neglect of this factor has been one of the commonest causes of failure of skin-grafting operations; in consequence the after-treatment advocated has aimed especially at preventing the accumulation of pus while avoiding at the same time any movement of the grafts. The means employed to achieve this were:—

(i.) The employment of a new and suitable material to hold the grafts in position and allow the escape of any discharge from the wound; at the same time it permits the surface to be efficiently cleansed at frequent intervals.

(ii.) The daily change of the outer dressings, which are kept constantly moist with some bland fluid.

The advantages claimed for the methods advocated are that—

1. Successful results can be obtained much more constantly.
2. The use of a general anæsthetic is dispensed with.
3. The raw surfaces left after the removal of the grafts, being closed with sutures, heal rapidly and certainly.
4. The resulting scars are stronger, more elastic, and less prone to ulceration than those resulting either from Thiersch's grafts or from the natural healing of wounds.

In addition, it is probable that by early grafting it will be possible to prevent many of the deformities due to the contraction of scar tissue

The results obtained in 29 transplantations of Steele's grafts are given, 22 of which were autodermic and 7 isodermic. These may be summarised as follows :—

80 to 100 per cent. of the grafts adhered in 18 out of these 29 cases.
48 ,, 80 ,, ,, ,, 7 ,, 29 ,,
5 ,, 15 ,, ,, ,, 3 ,, 29 ,,
In the remaining case the result was a complete failure.

Under the name of "section grafting" an alternative method of obtaining grafts is described which has the merit of being very economical of the skin taken for the grafts, and leaves a simple sutured wound at the site from which the skin was taken. This type of graft was employed in four cases, two of which were perfect successes and the remaining two partial successes.

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THE TREATMENT OF WOUNDS OF THE KNEE-JOINT.

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INJURIES of the knee-joint met with in military surgery are usually produced by rifle bullets, shrapnel, or pieces of high-explosive shell. Bayonet or sabre wounds are rare. There may or may not be injury to one or more of the bones which enter into the articulation. In some cases injury is so severe as to necessitate immediate amputation, but in the majority of cases an attempt should be made to save the limb.

These injuries may be divided into four classes.

Classes I. to III.

Class I.—Contusions of the joint, caused usually by spent bullets which, though they often lodge in the tissues, do not penetrate the synovial membrane, but give rise to hæmorrhagic effusion into the joint cavity. Thorough cleansing of the wound and removal of the bullet, together with any foreign matter which may have been carried into the tissues, followed by complete rest in a Thomas's knee- or a back-splint with a foot-piece, is usually all that is necessary, though aspiration will in some cases expedite recovery.

Class II.—Wounds of the joint usually produced by rifle bullets fired at a moderate range, which traverse the joint without doing severe injury to any of the bones and in which infective material does not appear to have been carried into the synovial cavity. These cases are suitable for excision of the wound and suture of the synovial membrane, though many cases recover without surgical interference provided the joint is kept at rest, as shown by two cases which have come under my observation :—

One was suffering from arteriovenous aneurysm of the popliteal vessels produced by a rifle bullet which had perforated the patella and passed through the knee-joint, injuring the vessels in its course. No operative treatment had been performed, but three months after the injury all effusion had been absorbed and movements were perfect in every respect.

The other was a case shown to me by Major Fayrer, I.M.S., in No. 5 Indian General Hospital, in which the bullet had penetrated the joint anteriorly, leaving a small wound with dirty-grey edges, from which synovial fluid was freely escaping. The bullet was shown by X rays to be lying between the condyles of the femur at the back of the joint. Fluid drawn from the joint was sterile and the wound healed under antiseptic dressings. The bullet was subsequently removed by operation.

Class III.—Wounds of the joint with gross injury to one or more of the bones which enter into its formation, but in which there is no apparent infection of the synovial cavity. The treatment in these cases should follow the same lines as in Class II., but in addition the fragments of the fractured bone or bones should be placed and maintained in good position, complete rest secured, and the introduction of wire or screws should, as far as possible, be avoided until there are good reasons for believing the danger of suppuration in the joint has passed.

Class IV.: Infected Cases.

Class IV.—Wounds of the joint with or without gross injury to the bones, complicated by the presence of infective material in the synovial cavity. I have placed these cases in one group; but bone injury introduces additional difficulties in treatment, and gravely influences the prognosis.

If the case is seen early, complete excision of the wound, removal of all foreign material, and suture of the synovial membrane after carefully washing out the joint cavity with ether may prove efficacious in mild infections. The treatment should be followed, when necessary, by aspiration and injection of ether, saline solution (1–5 per cent.), glycerine, iodoform-ether, or formalin 2 per cent. in glycerine every day or two until the aspirated fluid is found to be sterile (Dakin's fluid, chloramide, a powerful and comparatively non-irritating antiseptic, might prove a successful substitute for ether). Should the patient get progressively worse or show no improvement after aspiration and injection have been given a few days' trial, more radical methods should be adopted before the knee-joint becomes disorganised.

Unfortunately, no case has come under my care sufficiently early to justify the employment of this method of treatment, but I have tried hypertonic saline irrigation with disappointing results, the patients gradually getting worse until thorough drainage of the posterior pouches had been established. My experience is very limited, but to me it seems possible that the action of hypertonic salt solution in drawing out antibodies is not so potent in the case of the knee-joint as in other regions of the body which appear to have greater resistance to the growth and spread of pyogenic organisms. The anatomical formation of the knee-joint is also such as to render satisfactory lavage through anterior incisions only extremely difficult, if not impossible.

The synovial membrane extends upward under the quadriceps as the subcrureus bursa and forms lateral pouch on either side of the patella, then extends backwards under the lateral ligaments to form the posterior pouches at the back of the condyles of the femur, lining the posterior ligament of Winslow to near the middle line, when it is reflected forward on either side of the crucial ligaments to become continuous in front of these structures. The condyles of the femur fit so accurately into the cups on the head of the tibia and are held in such close apposition by ligaments that it is impossible to pass a sheet of note-paper between the cartilage-covered surfaces; moreover, when the posterior pouches have been freely opened and the front of the joint is being irrigated little or no fluid will drain through these incisions, showing that the knee consists of three almost watertight compartments.

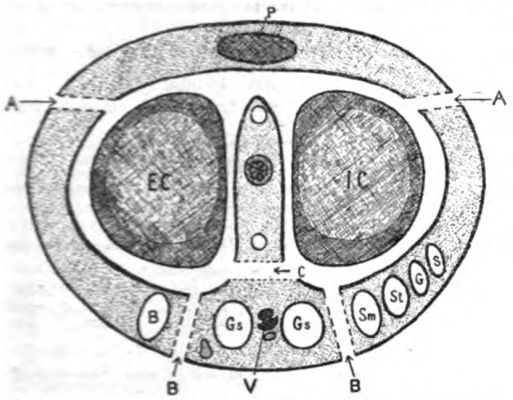
Infection, however, spreads backwards sooner or later, and no amount of vigorous treatment of the anterior cavity will affect suppuration in the posterior pouches. In my opinion the anatomical construction of the joint alone will explain the frequent failure of irrigation when efficient posterior drainage is not provided, and the frequency with which pus finds its way through the back of the joint and burrows amongst the muscles of the thigh and calf, rendering treatment difficult and prognosis bad.

The method of drainage I have employed for the last 12 years in severe traumatic infections of this joint is illustrated in the accompanying diagrammatic section. The method appears to be equally satisfactory in septic gunshot wounds, and was suggested to me by the late Mr. Harold Barnard, though I am not sure the incisions are identical with those described by him.

A free incision is made into the subcrureus bursa and into the lateral pouch (A) on either side of the patella and drainage-tubes of moderate size inserted into the joint. The patient is then turned on his face, an incision made on either side (B) between the hamstring and the gastrocnemius,

and the ligament of Winslow freely incised longitudinally over either condyle of the femur.

In making the external incision care must be taken to avoid the external popliteal nerve which should be drawn inwards with the gastrocnemius. In cases where suppuration is prolonged difficulty may be experienced in keeping open the posterior incisions, but in these cases good drainage can be obtained by making a communication (C) between the posterior pouches in front of the ligament of Winslow and behind the crucial ligament and passing a small tube through from one posterior incision to the other.



Diagrammatic section to illustrate author's method of drainage of knee-joint. A, incisions into lateral pouches; B, incisions into posterior pouches; C, incision to establish free communication between posterior pouches. Bones: P, patella; EC, IC, condyles of femur. Muscles; B, biceps; GS, gastrocnemius; SM, semi-membranous; ST, semi-tendinosus; G, gracilis; S, sartorius; V, popliteal vessels. The nerves are shown but not lettered.

The limb should be fixed on a splint in a slightly flexed position. Mr. Hey Groves's femur splint or the Balkan splint is the most satisfactory, as they allow slight extension to be applied, which adds to the comfort of the patient and delays erosion of cartilage. Moreover, the wound can be dressed without disturbing the limb.

Irrigation with salt solution, weak iodine, or other mild antiseptic should be carried out in the early stages, and if there is much inflammation hot fomentations are beneficial. I usually employ lint soaked in liq. sodæ chlorinatæ (1 in 40). The drainage-tubes should be removed as early as possible, and gentle passive movements commenced as soon as active mischief has ceased. Great care must be taken to prevent the tibia falling back on the femur while the wounds are healing and the ligaments still soft.

Results.

In all five cases of infection of the knee-joint due to the gunshot or shell wounds which have come under my care the time for practising excision of the tissues surrounding the wound and suture of the synovial membrane had passed.

One case had been suffering from suppuration in the joint for four or five weeks, accompanied by severe constitutional symptoms. I drained the joint by the method described above, but as no improvement resulted in general condition, the leg was amputated a few days later. The cartilage was found eroded in places, but there was no collection of pus in any part of the joint. I regret he died from pyæmia, but had his knee been freely drained at an early date, it is my belief that both limb and life would have been saved.

A young Australian, from the lower end of whose femur a shrapnel bullet had been removed and the synovial membrane sutured after excision of the infected tissues, arrived from the Peninsula at the Bombay Presidency Hospital with severe constitutional symptoms and his knee-joint inflamed and distended with pus. The knee was drained through anterior and posterior incisions, and though he went through a mild attack of tetanus, which delayed progress, he recovered with a joint possessed of fair and an increasing amount of movement.

Two other cases from the Peninsula were treated by continuous hypertonic saline irrigation, but as they both appeared to be losing ground I established free drainage five or six days later with satisfactory results.

Another case was under the care of one of my colleagues who, after removing all foreign material and grossly infected tissue, tried continuous irrigation with hypertonic, followed by normal saline solution. The local condition gradually got worse, and after three weeks suppuration appeared in the tissues at the back of the thigh necessitating an incision. A week later I was asked to operate, and found that one of the posterior pouches had ruptured, causing suppuration amongst the muscles, and the other, when incised, discharged about a drachm of pus. His condition steadily improved, until he was transferred on the departure of the Bombay Presidency Hospital.

In conclusion, I wish to emphasise the necessity for free drainage of the posterior pouches. If this is done at a reasonably early stage the large majority of cases will recover with a useful limb and many with a fair range of movement. Complete ankylosis will by no means necessarily follow. I am convinced that too extended a trial of milder methods of treatment has led to the loss of many limbs and lives which might have been saved had free drainage been established earlier. Moreover, free incisions into the posterior pouches will do all that can be hoped for from freely opening up the joint by cutting through the ligamentum patellæ and other ligaments and will leave an infinitely more useful limb.

A NEW PHYSICAL SIGN IN PNEUMOTHORAX AND IN PLEURAL EFFUSION.

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THE sign dealt with in this paper and which, so far as I am aware, has not been previously described, I have found to be present, as far as appears from the number of cases examined, in the great majority of instances of pleural effusion, and it seems to occur in an even greater proportion of patients afflicted with pneumothorax. In fact so frequently have I observed the phenomenon that I consider that it may quite probably be found to be a valuable confirmatory sign of one or other of these conditions, more especially of pneumothorax.

Nature and Explanation of the Sign.

Briefly, the observation consists in the fact of the existence in these cases of a markedly diminished blood pressure in the leg as compared with that in the arm on the same side, a difference usually of at least 10 mm., and in many cases of over 20 mm.

In normal persons the systolic arterial blood pressures taken simultaneously with due precautioms in the arm and leg of the same side (the armlet round both limbs being at the same level) will be found to yield practically identical readings. On the other hand, in certain pathological states differences have been found, the leg reading being higher than that taken in the arm. Thus I have observed differences of this kind in high pressure cases associated with arterio-sclerosis,[1] and Leonard Hill has noticed them as a constant phenomenon in cases of aortic incompetence.[2] Differences in the opposite direction (in which the arm reading is higher than the leg one) doubtless exist under conditions in which there is obstruction to the circulation in the lower extremities, but so far, except in the class of case with which this paper is concerned, I have found only two definite instances: one in a girl aged 15 years, suffering with advanced pulmonary tuberculosis, in whom the leg reading was lower than the arm one by from 12 to 13 mm., the other in a male infant aged 2½ years (diagnosis uncertain), in whom a similar difference varying between 15 and 20 mm. existed. In neither of these cases was there an opportunity of making a post-mortem examination, so that the explanation of the phenomenon in them remains in doubt.

In regard to the explanation of the sign dealt with in this paper it will be remembered that anatomically the pleura on each side, more especially on the left, comes into relation with the descending thoracic aorta as it lies on the vertebral column, and I would suggest the most obvious cause to be that when the pleural cavity is distended with liquid or with gas pressure upon the aorta takes place, such pressure causing to a greater or lesser degree corresponding diminution in systolic pressure distally to the compressed

[1] O. K. Williamson: Clinical Observations on the Influence of the Vessel Wall on (so-called) Arterial Blood-Pressure Readings, Proc. Roy. Soc. Med., May, 1909.

[2] Leonard Hill: The Measurement of the Systolic Blood Pressure in Man, "Heart," vol. i., No. 1.

area. This explanation would be the same as applies in some cases of diminution of the sphygmometer reading in one upper extremity as the result of pressure by the sac of an aneurysm.

In one or two young children with pleural effusion whom I have examined for the sign I have not found it to be present to a marked degree. Perhaps this may be explained by the fact that the chest walls are less rigid in these than in older subjects. Thus, an intrathoracic pressure which in the case of the adult would exercise compression upon the aorta would in the young child be partly dissipated by the yielding chest walls, and would therefore fail to interfere to the same degree with the aortic blood pressure. Accordingly these cases in young children are not included in my series. Further, I have not included effusions in which there are higher leg readings resulting from thickened arteries or aortic incompetence.

The method of observation has been as follows:—

The patient has been at rest in bed, so that the armlet used for the leg reading and that for the arm have both been at the level of the heart. The Riva Rocci type of instrument was used, an Oliver's armlet of width 12 cm. being placed round the upper arm, and another one round the calf of the same side. Both armlets were connected by means of a three-way tube with the same pump and manometer. One observer took the systolic reading in the radial artery, the other in the dorsalis pedis or posterior tibial, and for alternate observations the two observers changed about so that the one who had previously taken the arm reading now took the foot one, and *vice versa*, the object of this procedure being to eliminate any personal equation. The readings taken were those obtained on letting the air out of the armlets after inflating them to a degree greater than necessary to obliterate the pulse in both limbs. The results are recorded in mm. of mercury.

Results of Observations.

These results show distinct differences in five out of the six cases of pneumothorax, and in five out of the seven cases of pleural effusion. In the former the differences are considerable, the average works out at exactly 16½ mm., and in three of these cases the figure reaches a height ranging from 23 to 27 mm. In the cases of pleural effusion the average difference works out at 12½ mm., and in one it actually reaches a figure of 35 mm. The details of the cases examined are as follows. Corresponding observations (on right or left side, as the case may be) on the same line were made simultaneously.

No. 1. Male, aged 28 years. Left hydro-pneumothorax. Bell sound, succussion splash, heart displaced.

Feb. 12th, 1913.			Feb. 19th, 1913.		
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
122 mm.	104 mm.	18 mm.	122 mm.	114 mm.	8 mm.
120 mm.	118 mm.	2 mm.	112 mm.	116 mm.	−4 mm.
122 mm.	100 mm.	22 mm.	112 mm.	110 mm.	2 mm.
124 mm.	112 mm.	12 mm.			

No. 2. Male, aged 24 years. Left pyo-pneumothorax, pulmonary tuberculosis. Succussion splash, heart displaced.

Dec. 1st, 1915.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
122 mm.	90 mm.	32 mm.	112 mm.	100 mm.	12 mm.
114 mm.	84 mm.	30 mm.	124 mm.	104 mm.	20 mm.

No. 3. Male, aged 19 years. Artificial pneumothorax (right), pulmonary tuberculosis.

Dec. 22nd, 1915.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
134 mm.	136 mm.	−2 mm.	134 mm.	172 mm.	−38 mm.
140 mm.	130 mm.	10 mm.	156 mm.	144 mm.	12 mm.

No. 4. Male, aged 34 years. Artificial pneumothorax (left), pulmonary tuberculosis.

Feb. 2nd, 1916.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
108 mm.	*circa* 85 mm.	23 mm.	98 mm.	83 mm.	15 mm.

No. 5. Female, aged 17 years. Artificial pneumothorax (right), pulmonary tuberculosis.

Nov. 8th, 1916.					
Left arm.	Left leg.	Difference.	Left arm.	Left leg.	Difference.
112 mm.	*circa* 60mm.	52 mm.	113 mm.	92 mm.	21 mm.
110 mm.	115 mm.	−5 mm.	112 mm.	80 mm.	32 mm.
112 mm.	60 mm.	52 mm.	118 mm.	103 mm.	15 mm.

No. 6. Female, aged 20 years. Left pneumothorax, pulmonary tuberculosis. Marked signs of pneumothorax, heart displaced.

Feb. 13th, 1917.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
115 mm.	85 mm.	30 mm.	112 mm.	98 mm.	14 mm.
112 mm.	*circa* 60 mm.	52 mm.	110 mm.	95 mm.	15 mm.
112 mm.	83 mm.	29 mm.	115 mm.	100 mm.	15 mm.
110 mm.	100 mm.	10 mm.	114 mm.	70 mm.	44 mm.
112 mm.	85 mm.	27 mm.			

Feb. 27th, 1917.					
Right arm.	Right leg.	Difference.	Right arm.	Right leg.	Difference.
120 mm.	90 mm.	30 mm.	120 mm.	95 mm.	25 mm.
120 mm.	86 mm.	34 mm.	115 mm.	83 mm.	32 mm.

No. 7. Male, aged 16 years. Right pleural effusion.

June 10th, 1912.			June 17th, 1912.		
Left arm.	Left leg.	Difference.	Right arm.	Right leg.	Difference.
138 mm.	110 mm.	26 mm.	138 mm.	100 mm.	38 mm.
130 mm.	90 mm.	40 mm.	132 mm.	100 mm.	32 mm.
128 mm.	83 mm.	45 mm.	128 mm.	90 mm.	38 mm.
130 mm.	83 mm.	47 mm.	132 mm.	120 mm.	12 mm.

No. 8. Male, aged 12 years. Left pleural effusion. Signs very slightly marked.

Feb. 2nd, 1916.					
Right arm.	Right leg.	Difference.	Right arm.	Right leg.	Difference.
95 mm.	98 mm.	−3 mm.	97 mm.	98 mm.	−1 mm.

No. 9. Female, aged 50 years. Left pleural effusion. Signs slightly marked.

March 31st, 1916.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
114 mm.	97 mm.	17 mm.	109 mm.	103 mm.	6 mm.
121 mm.	97 mm.	24 mm.	107 mm.	106 mm.	1 mm.

No. 10. Female, aged 31 years. Left pleural effusion. Signs of effusion marked, heart displaced.

August 30th, 1916.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
123 mm.	121 mm.	2 mm.	115 mm.	115 mm.	Nil.
144 mm.	115 mm.	29 mm.	124 mm.	123 mm.	1 mm.
130 mm.	115 mm.	15 mm.			
140 mm.	115 mm.	25 mm.			

No. 11. Male, aged 15 years. Pleural effusion. Signs slightly marked.

Sept. 6th, 1916.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
132 mm.	128 mm.	4 mm.	130 mm.	134 mm.	−4 mm.
127 mm.	105 mm.	22 mm.	127 mm.	119 mm.	8 mm.
128 mm.	127 mm.	1 mm.			
128 mm.	119 mm.	9 mm.			

No. 12. Male, aged 17 years. Left pleural effusion. Signs of effusion marked, heart displaced.

Oct. 20th, 1916.					
Left arm.	Left leg.	Difference.	Left arm.	Left leg.	Difference.
105 mm.	92 mm.	13 mm.	105 mm.	90 mm.	15 mm.
111 mm.	90 mm.	21 mm.	111 mm.	93 mm.	18 mm.

On Oct 23rd 35 ounces of fluid removed from left pleural cavity.

No. 13. Male aged 15 years. Left pleural effusion. Signs of effusion marked; heart displaced.

Oct. 25th, 1916.					
Right arm.	Right leg.	Difference.	Left arm.	Left leg.	Difference.
104 mm.	92 mm.	12 mm.	87 mm.	60 mm.	27 mm.
100 mm.	85 mm.	15 mm.	98 mm.	80 mm.	18 mm.
95 mm.	85 mm.	10 mm.	92 mm.	93 mm.	−1 mm.
100 mm.	92 mm.	8 mm.	92 mm.	92 mm.	Nil.
			95 mm.	95 mm.	Nil.

On Oct. 26th 2½ pints of fluid removed from left pleural cavity.

I have to thank my colleagues for allowing me to examine cases under their care; also Dr. C. D. S. Agassiz, Dr. C. G Whorlow, Dr. I. Bastow, Dr. H. Davies, Dr. J. R. Earp, Dr. A. E. P. Parker, Mr. Carpenter, and Mr. Unwin for kindly assisting me in carrying out the observations.

Bryanston-street, W.

SUSCEPTIBILITY TO CEREBRO-SPINAL FEVER IN RELATION TO AGE.

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IN continuation of our studies into the etiology of cerebro-spinal fever we have been led to investigate the most susceptible age for the appearance of the disease. Theoretically, as will be seen presently, the question is of considerable interest in its bearing on etiology. Practically, it is also of importance, in view of the fact that many diseases are to-day recognised as showing age incidence, the latter often playing a prominent part for the clinician in the differential diagnosis of numerous conditions.

For the purpose of the present study we have taken data, collected by ourselves, arising out of the epidemics of 1914–15 and of 1915–16 in the Dorset Military District.

With regard to the epidemic of 1914–15, of 31 cases (civil and military) of the disease, about whom accurate information as to age is available, the age-distribution is as follows:—

Age.	Cases %	Age.	Cases %
5 to 10 years.	3·22	30 to 35 years.	9·68
10 ,, 15 ,, ...	4·84	35 ,, 40 ,, ...	6·45
15 ,, 20 ,, ...	22·58	40 ,, 45 ,, ...	1·61
20 ,, 25 ,, ...	37·10	45 ,, 50 ,, ...	4·84
25 ,, 30 ,, ...	6·45	Over 50 ,, ...	3·23

On plotting the percentage of cases as ordinates, and the corresponding age-periods as abscissæ, these numbers give the graphical representation of Fig. 1. This figure shows

that for the epidemic of 1914–15, so far as the Dorset District is concerned, the *apparent* most susceptible age is between 20 and 25.

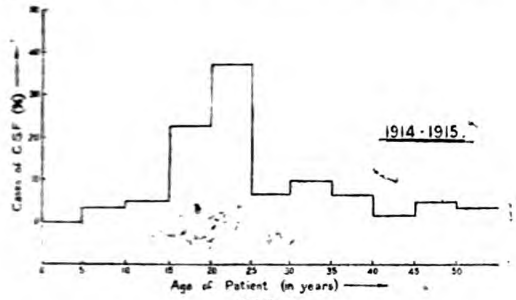


FIG. I.

In regard to the epidemic of 1915–16, of 62 cases (civil and military) occurring in the district from the beginning of July, 1915, to the end of June, 1916, their distribution in terms of age is as follows:—

Age.	Cases %	Age.	Cases %
Under 5 years	1·61	30 to 35 years	4·03
5 to 10 ,, ...	1·61	35 ,, 40 ,, ...	2·42
10 ,, 15 ,, ...	0·0	40 ,, 45 ,, ...	3·22
15 ,, 20 ,, ...	28·22	45 ,, 50 ,, ...	1·61
20 ,, 25 ,, ...	43·56	Over 50 ,, ...	0·0
25 ,, 30 ,, ...	13·71		

On graphical representation these numbers give the curve of Fig. II. This figure shows that the *apparent* most susceptible age is between 20 and 25, in which age-period nearly 50 per cent. of the cases occurred. In this particular the finding for 1915–16 confirms that of 1914–15; indeed,

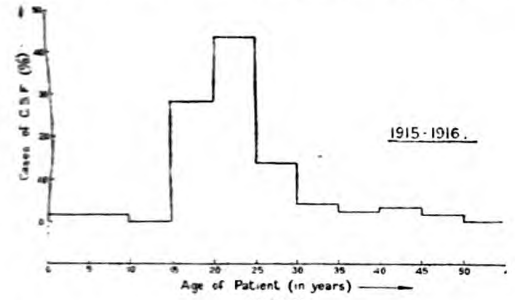


FIG. II.

the parallelism between the two curves is very striking. This age, it will be noticed in passing, corresponds to the military age.

In order to get the *real* most susceptible age, and at the same time to generalise the above finding, the percentage number of cases for each age-period requires to be referred to the percentage number of people of that age-period living in the district at the time.

To get a rough approximation to the latter I have taken the combined statistics of the contacts, 914 in number, of the 31 cases (1914–15), and the contacts, 2109 in number, of the 62 cases (1915–16)—dealt with by the laboratory[1]—and arranged them in terms of age-periods. Table I. sets out the result:—

TABLE I.

Age-period.	No. of contacts.	% Age-distribution.	Age-period.	No. of contacts.	% Age-distribution.
Under 5	6	0·20	30 to 35	325	10·75
5 to 10	13	0·43	35 ,, 40	233	7·71
10 ,, 15	17	0·56	40 ,, 45	141	4·66
15 ,, 20	614	20·31	45 ,, 50	85	2·81
20 ,, 25	982	32·48	Over 50	53	1·75
25 ,, 30	554	18·33			

Now, if we arrange the 93 cases of the disease, to which the above numbers appertain, in corresponding age-periods, and refer the percentage number of cases in each age-period to the percentage age-distribution of that period we get Table II.

[1] Associated, as laboratory staff, with me in connexion with these contact examinations have been: A/Sgt. J. W. J. Leighton, B.Sc. Lond., R.A.M.C. (T.); Corpl. H. L. Smith, R.A.M.C. (T.); Ptes. G. Blunt, T. Dakin, and E. Wigg, of the R.A.M.C.

TABLE II.

Age-period.	Total No. of cases in the district during 1914–15 and 1915–16.	% Cases.	% Cases. / % Age-distribution.	
Under 5	0 + 1 = 1	1·08	1·08 / 0·20	5·40
5 to 10	1 + 1 = 2	2·15	2·15 / 0·43	5·00
10 ,, 15	1·5 + 0 = 1·5	1·61	1·61 / 0·56	2·87
15 ,, 20	7 + 17·5 = 24·5	26·34	26·34 / 20·31	1·30
20 ,, 25	11·5 + 27 = 38·5	41·40	41·40 / 32·48	1·27
25 ,, 30	2 + 8·5 = 10·5	11·29	11·29 / 18·33	0·61
30 ,, 35	3 + 2·5 = 5·5	5·91	5·91 / 10·75	0·55
35 ,, 40	2 + 1·5 = 3·5	3·76	3·76 / 7·71	0·49
40 ,, 45	0·5 + 2 = 2·5	2·69	2·69 / 4·66	0·58
45 ,, 50	1·5 + 1 = 2·5	2·69	2·69 / 2·81	0·95
Over 50	1 + 0 = 1	1·08	1·08 / 1·75	0·61
—	31 + 62 = 93	100·0	—	—

In reckoning the number of individuals occurring in a given age-period those appertaining to the ages which limit the period are counted both ways—e.g., if there were 15 cases of 20 years of age 7·5 would be referred to the period 15–20 and 7·5 to the period 20–25. This is the explanation of the decimals in Column 2.

On plotting the ratios of column 4, in above table, as ordinates and the corresponding age-periods as abscissæ we get the curve of Fig. III. A glance at this figure suffices to see that for the present epidemic the *real* most susceptible age is under 5 years—that is, during infancy and early childhood, while there is a marked falling off of cases after adolescence is passed and adult life is reached; indeed, the least susceptible age would appear to be between 35 and 40.

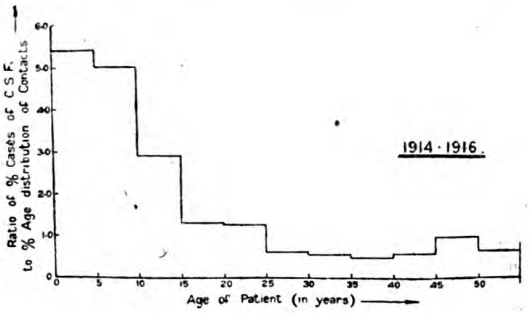


FIG. III.

It is interesting to note that this result establishes the parentage of the present epidemic with that of former epidemics in this and other countries, children in other epidemics, according to most observers, having been noted to be most susceptible to the disease.

But, in addition, the result is of interest from the point of view of etiology. My studies in connexion with the disease in the Dorset district during 1914–15 led me to formulate the hypothesis that cerebro-spinal fever is a weather disease, outbreaks being associated with sudden saturation of the atmosphere by water-vapour, combined with equable conditions of temperature—the meningococcus being about.[2] This hypothesis has been further developed and confirmed by my studies of 1915-16.[3] On this theory the increased facility with which, in the case of the child "carrier," the meningococcus traverses the naso-pharyngeal mucous membrane barrier to enter the system and invade the meninges can easily be explained by the greater fragility and delicacy of the naso-pharyngeal mucosa of the child.

[2] Report to the War Office—Medical Research Committee—of August 2nd, 1915 (Jour. R.A.M.C., November, 1915, pp. 546–570; THE LANCET, 1916, i., 255).

[3] Report to the War Office of Oct. 16th, 1916 (not yet published).

Reviews and Notices of Books.

Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and its Membranes. By CHARLES A. ELSBERG, M.D., F.A.C.S., Professor of Clinical Surgery at the New York University, &c. With 158 illustrations, three being in colour. London and Philadelphia: W. B. Saunders Company. 1916. Pp. 330. Price 21*s.* net.

Professor Elsberg has written a useful book, based on personal experience, dealing with the diseases of the spinal cord and its membranes which may require surgical interference. It is, however, not merely an excellent handbook for the surgeon; it contains material of clinical interest for neurologist and physician. In the first of the three sections of the book, the author is faced with the inevitable problem of how to allot space to spinal anatomy, physiology, and symptomatology. That adequate knowledge of these is essential to diagnosis goes without saying, but how far the surgeon is willing to operate where and as the physician indicates, how far he is keen to make, and capable of making, his own differential diagnosis, are matters which vary with the individual. Professor Elsberg is of those who hold that successful neurological surgery depends on having a working knowledge of organic neurology, but in spite of the general value of the chapters dealing with the factors in diagnosis, it would not be difficult to show that diagnostic problems not infrequently face the neurologist which could scarcely be solved were he to rely only on the information there supplied. The author makes the general statement that if the diagnosis is uncertain and the possibility of a remedial spinal disease cannot be excluded, an exploratory operation may be justified. We hear much of "giving the patient the benefit of the doubt," yet the engendering of false hopes by the mere fact of exploration is to be sedulously avoided, for most neurologists have had cases where operation has aggravated the mischief.

Part II. deals with the surgical technique of spinal operations, and includes lumbar puncture. Part III. deals seriatim with the "surgical diseases" of the spinal cord and membranes. It is instructive to learn that Professor Elsberg has operated with advantage in such conditions as hæmatomyelia, syringomyelia, and even spinal gliosis, making decompressive incisions in the cord. He has also divided the ventro-lateral tracts in the cord for persistent pain of organic origin in the lower parts of the body. Such operations may appear to be rather heroic, and not a few who are familiar with the pathology of these conditions will be unimpressed by some of the author's more sanguine statements. Yet we are in agreement with him in holding that where we are dealing with incurable diseases we are justified in attempting at least a modicum of relief.

The general get-up of the book is excellent; the illustrations are beautiful, and the diagrams satisfactory. While it contains matter that is controversial, and while some of the contentions advanced may be far from meeting with the approval of neurologists or other neurological surgeons, Professor Elsberg is to be complimented on the publication of a contribution to the subject that is both stimulating and instructive, not least in its progressive spirit and the possibilities which it suggests for the future development of the science and art of neurological surgery.

The Secretion of the Urine. (*Monographs on Physiology.*) By A. R. CUSHNY. London: Longmans, Green, and Co. 1917. Pp. 241. Price 9*s.* net.

THE writer of a monograph on the secretion of urine is faced with a difficult task. The difficulty lies in the enormous literature of the subject, in the apparently incompatible nature of much of the evidence, and in the fact that the interpretation of their results has so often been influenced by the predilection of the observers in favour of a particular theory as to the secretion of urine. Professor Cushny is to be congratulated on his achievement in writing this monograph, which for the first time, we believe, presents a dispassionate and critical review of the literature, appraises the value of the more important of the investigations, and places the fundamental features of the problem before the reader in a clear and comprehensive fashion.

After stating the view of Bowman and Heidenhain, and briefly considering some modifications of their theory, the author puts forward the view—which he calls the "modern" view—that the capsule filters off the non-colloid constituents of the plasma, and that the tubules absorb water, sodium chloride, and small amounts of other substances, the composition of the absorbed fluid approximating to that of Locke's fluid. Some of the crystalloid constituents of the plasma are filtered off in proportion to their absolute amount in the plasma, and are called *no-threshold* bodies; others are known as *threshold* bodies, since they are excreted by the capsule only when their percentage in the plasma exceeds a certain value. The striking feature of this theory is the denial of secretory powers to any part of the kidney, and the limitation of the vital activity of the cells of the tubules to the absorption of a fluid of constant composition. In succeeding chapters the evidence for and against the Bowman and Heidenhain theory is critically examined, more especially Heidenhain's experiments on the secretion of dyes, and also the many observations on the frog's kidneys. The conclusion is drawn that Heidenhain's experiments are invalid, and that for various reasons the experiments on the frog's kidney do not furnish decisive proof of the secretory function of the tubules. The author then proceeds to develop the "modern" view and to show how it explains the effects of changes in the blood-supply and of diuretics upon the amount and composition of the urine. The last chapters are devoted to glycosuria, albuminuria, and nephritis.

There is no doubt that the author's view of the process by which urine is formed is logical, and that it affords an adequate interpretation of the majority of the established observations on the kidney; it is particularly convincing as regards diuretics. Further, it was perhaps to be expected that when absorption by the tubules had been definitely established the pendulum would swing in its direction to the complete exclusion of secretion. In our opinion, however, the evidence in favour of secretion by the frog's kidney is too strong to be disregarded, and it is necessary to admit the occurrence, or at least the strong probability of the occurrence, of secretion by the tubules, although possibly to a comparatively limited extent or in special circumstances. This possibility, indeed, is recognised by Professor Cushny. However this may be, Professor Cushny's broad and impartial survey of the whole subject marks a considerable advance towards the solution of the problem, and cannot fail to be of the utmost value to future workers.

The Causation of Sex in Man. By E. RUMLEY DAWSON L.R.C.P. Lond., M.R.C.S. Eng. Second edition. With 22 illustrations. London: H. K. Lewis and Co. 1917. Pp. 226. Price 7*s.* 6*d.* net.

IN reviewing the first edition of this work we pointed ou that in many instances the attempts which have been mad to solve the complex problem of the causation of sex hav been made with an absence of that scientific precisio which is essential if we are ever to arrive at the truth. I the second edition of his book Mr. Rumley Dawson, wh claims to prove that male ova come exclusively from th right ovary and female ova from the left ovary, and, furthe that the two ovaries ovulate alternately and in regular rot tion, entirely ignores all the recent work which has be done on this subject. He takes no interest in the numero and accurate observations on the causation of sex in t lower animals, even though some of them lend a litt support to his view, inasmuch as they tend to prove th the sex is already determined in the ova before they a expelled from the ovary. He brings forward every s called fact which in his opinion tends to prove his hyp thesis, and ignores or tries to explain away all those whi are opposed to it. For instance, the not uncomm example of a run of children of the same sex preceded followed by one child of another sex he convenien accounts for by assuming the presence of a unilate sterility!—a condition in the case of a fertile wom extremely uncommon and in the case quoted entir unproved. If, instead of quoting cases in which he sta his prognostications have been successful, the author h published a consecutive series of fully recorded ca including both his failures and successes, we should inclined to place more reliance on his so-called proofs.

The Combined Treatment of SYPHILIS.

SUPSALVS

STABLE SUPPOSITORIES OF "606" (OF FRENCH MANUFACTURE)

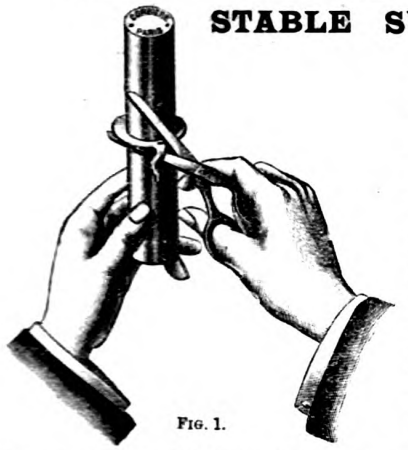


FIG. 1.

Fig. 1 represents the special patent metallic envelope containing a Supsalv for hot climates. The projecting edge in the middle is cut by scissors—the two ends are then easily pulled apart. The envelope should first be immersed in cool or iced water for 10 minutes.

At the International Congress of Medicine Ehrlich stated that the biochemical action of "**606**" on spirochætes is not direct but indirect, a third factor found in the body fluids being necessary.

This success is explained by the well-known experiment of Levaditi: "If living treponemas be placed in a solution of Arsenobenzol (Ehrlich's 606) they continue to live in it. But if a trace of extract of liver be added to the mixture the treponemas are destroyed."

"If 606 has to be taken up and transformed **by the liver** in order to become toxic to the treponema, there is no better mode of absorption of the drug than **by way of the intestine**, since all the **veins of the intestines** join the **portal vein**. If this be the case no route could be more indirect and more unsatisfactory for active treatment than one that is not intestinal or not intravenous (i.e., prehepatic), since some of the drug must necessarily become fixed everywhere before the passage through the liver has activated it."—Dr. Sabouraud, La Clinique (13-4-1913).

As a result of numerous clinical experiments, Dr. Bagrov, of Moscow, has arrived at the same conclusion, and recommends the rectal method of administration of 606.

200 cases were treated by the combined treatment in one of the London hospitals. In each case a negative reaction was attained.

Extremely Simple in use.

No Ill-effects.

Most Satisfactory Clinical Results.

Rapid Absorption.

MERSALV

FOR MERCURIAL INUNCTION IN CONNECTION WITH SUPSALVS TREATMENT.

CHEMISTRY.—"**Mersalv**" contains *10 per cent. metallic mercury*, which by a special mechanical process exists in the minutest state of sub-division possible. It is a *non-greasy* preparation, and, in contra-distinction to other mercurial preparations, contains no organic fats or oils. "**Mersalv**," is of a white creamy consistence, of pleasant odour, and *cleanly in application*.

IN SPECIAL GLASS STOPPERED BOTTLES FOR HOT CLIMATES.

GALYL

Recurrent Fever, SYPHILIS, Frambœsia and Sleeping Sickness.

Practical work with GALYL in the shape of **60,000 INTRAVENOUS** (Dilute and Concentrated) and **INTRAMUSCULAR INJECTIONS** administered in Military, Naval, and the principal General Hospitals throughout the United Kingdom has demonstrated that this preparation is **MORE RAPID** and **LESS TOXIC** in its action than any compound of the "606" group, which accounts for the **consistently excellent clinical results without any undesirable by-effects.**

FORMS:

DILUTE. (INTRAVENOUS).	CONCENTRATED. (INTRAVENOUS).	INTRAMUSCULAR.
GALYL is supplied in neutral tinted glass ampoules, containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.	A special outfit containing 1 dose of GALYL, 1 ampoule sterilised solution, and 1 small filtering tube. DOSES: 0·10—0·15—0·20—0·30 0·35—0·40.	GALYL is supplied in Oily Emulsion. DOSES: 0·10–0·15—0 20 0·30—0·40.

GALYL is now tested in accordance with the requirements of the L.G.B.

3000 injections (intraveneous) were given in one of our **Service Hospitals.** "No case has given the slightest cause for anxiety and the clinical results are very satisfactory." *Staff Surgeon's Report.*

BIOSULFOL

(Assimilable Colloidal Sulphur.)

A GREAT ADVANCE IN SULPHUR TREATMENT.

Sulphur administered in this form by the digestive tract **is entirely absorbed** (90% in worst cases and 100% in others).

Biosulfol gives beneficial results, with which ordinary Sulphur medication, owing to its being only in a small part assimilated, cannot compare.

INDICATIONS:

Skin Diseases.
Chronic Affections of the Pharyngeal and Bronchial Mucous Membrane.
Chronic Affections of the Genital Mucous Membrane.
Chronic Rheumatism (Polyarthritis deformans).
Various Affections of the Joints.
Intestinal Intoxication.
Mercurial and Lead Poisoning, &c.

DOSAGE:

Biosulfol is prescribed in a one-teaspoonful dose, to be taken during each of the two principal meals, pure or in water or milk. It is quite palatable.

LITERATURE ON REQUEST.

THE ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C. 1.

Telephone: HOLBORN 1311. (Late M. BRESILLON & Co.) Telegrams: "AMPSALVAS, LONDON."

Antipyrin, Phenacetin, and Pyramidon superseded.

CRYOGENINE

LUMIERE.

NON-TOXIC. EFFICACIOUS. HARMLESS.

Adopted by the French Ministries for War and the Navy, also by the Poor Relief Board. Papers on "Cryogenine" have been read before various Medical Societies by over 90 of the most eminent Continental Medical Men. In each paper clinical results of the most satisfactory character are recorded. "Cryogenine" is a white crystalline powder, odourless and almost tasteless; its chemical composition is Metabenzamido semi-carbazide.

Cryogenine has a high reputation as a

GENERAL ANTIPYRETIC and POWERFUL ANALGESIC.

FORMS.—Tablets, Pills and Powder.

LANCET, Dec. 18th, 1909, p. 1812: "..... The above case is one out of a number of successful results obtained from the use of this remedy (Cryogenine) contrasted with Pyramidon, which certain writers regard as the best drug for phthisical temperature. I think there can be little doubt 'Cryogenine' is the safer and more efficacious antipyretic. ....."
J. E. G———, M.D.

HEMOPLASE

(LUMIÈRE).

Hemoglobin in its Natural State.—Iron in most assimilable form.

HEMOPLASE is a protoplasmic extract from the blood corpuscles of healthy animals. It has had a very extensive and exhaustive clinical trial in a large number of cases (Dr. Gelibert alone reported to the International Tuberculosis Congress the results of 1250 injections), and given consistently excellent results.

INDICATIONS:

MALARIA ANÆMIA
TUBERCULOUS AFFECTIONS
HÆMORRHAGE, &c.

Forms:

In Ampoules for Intramuscular or Hypodermic Injection; also in Pills for Internal Administration. This HEMOPLASE in the dry state contains all the active principles of the liquid form.

LITERATURE and CLINICAL REPORTS on REQUEST.

THE ANGLO-FRENCH DRUG CO., Ltd.
(LATE M. BRESILLON & Co.),

'Phone: HOLBORN 1311. **Gamage Building, Holborn, London, E.C. 1.** Telegrams: "AMPSALVAS, LONDON."

The SCIENTIFIC TREATMENT of HAY FEVER and allied ailments.

KINECTINE

According to Dr. MOUNEYRAT, the discoverer of Galyl and Hectine (the widely adopted Salvarsan Substitutes).

FORMULA:

Chlorhydrate of Quinine c. Hectine—i.e., *Benzo-sulfone-para-amino-phenyl-arsenate of Quinine.*

Non-toxic, produces no ill-effects.

Easily taken (tablets) and well tolerated.

Highly satisfactory clinical results:—

AS A PROPHYLACTIC AGAINST HAY FEVER, &c.

RAPID ABORTIVE ACTION IN THE INITIAL STAGES.

CURATIVE ACTION IN THE ADVANCED AND CHRONIC CONDITIONS.

Medical Treatment of CANCER.

CUPRASE

Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid. The numerous clinical reports from Doctors of repute in various countries give cases of a great variety. In all of these **pain has been eliminated,** and in a good percentage **cures are claimed,** and in no instance **any undesirable effects.** Its *easy application* (subcutaneous injections) places it within the reach of all practitioners. It *is not toxic.*

Extract from Proceedings of the Royal Society of Medicine, February, 1913.

Dr. George Herschell, comparing electric and chemical colloid copper, stated: "..... **Chemical colloid appears to give the best results.** In the following cases chemically prepared colloid was used. Experimentally it has been proved: (1) That particles of colloid copper can be demonstrated in the granulations of cancerous growths after two or three injections of the colloid; and clinically (2) **There is invariably great relief from pain;** (3) Appetite and strength return and the patient puts on flesh; (4) There is in many cases a diminution in the size of the tumour; (5) **The injections are absolutely non-toxic,** although in many cases an inflammatory reaction is manifested in the cancerous growths.

"As regards my own personal experience in the use of this method of treatment in addition to my own cases, I have had an opportunity of observing the effects in the practice of some of my medical friends, and in nearly all cases the progress of the disease appeared to be arrested."

THE LANCET.

LONDON: SATURDAY, JULY 7, 1917.

The Mesopotamia Report.

THE indictment of the Indian Government, and to some extent of the India Office, and of the general British conduct of Indian affairs which is contained in the Mesopotamia Report, is to receive notice in the House of Commons next week. In the House of Lords Viscount HARDINGE, the Viceroy of India during the commencement of the Mesopotamia campaign, has to some extent defended his own position; but as regards the breakdown of the medical arrangements for that campaign he made no more effective explanation than a confession that he had been misled by his subordinates. The report is very candid and clear and should be read by all our readers, even though they may have assimilated its essential messages from hearsay or the perusal of reprinted excerpts, because it is, among other things, a perfect exposition of the factors upon which effective medical and sanitary administration depend, and a revelation of the way in which those factors are habitually neglected. It is for this reason in particular that we return to the subject of the Report to-day. Medical men, military or civilian, experience extreme difficulty, when it is their duty to take control of their branch of some joint operations, if the superior controlling and directing powers are placed in a position in which no medical advice need be taken and no medical warnings need be heeded. Their presentiments are usually disregarded and their advice neglected. The essential qualities required of the medical men placed in this wise are necessarily foresight and courage—foresight to anticipate what will be the responsibilities falling upon their department, especially if events, over many of which they will have no control, do not progress favourably; and courage to insist upon attention to any requisition which they may make. And all demands from medical men upon a reluctant authority have to be proffered with a full knowledge of the personal advantage to be gained by remaining quiet, and sometimes with contempt for threats of the punishment that may be meted out to recalcitrant subordinates. In some centres of local government, especially in backward provincial towns, the medical officer of health could tell this story from out of his own experience; and there are still places where the man who has the foresight and courage to know what is wanted, and to ask for it, is treated by his local sanitary authority as a nuisance—as one who desires to bring the good name of the community into disrepute. Medical men are, unfortunately, used to this discreditable state of affairs in regard to domestic government, and have not been profoundly surprised to learn that the same miserable situation exists when the greatest interests are at stake. But to the public the whole story of the medical breakdown during the 1915–16 campaign in Mesopotamia has come as an appalling shock, and the blind neglect of medical precautions during the operations is seen to have been due, at bottom, to the fact that the Government of India took no heed of such matters, and looked favourably only upon officials who made no trouble.

The earlier part of the medical arrangements in Mesopotamia were fairly satisfactory, but this seems to have been greatly due to the fact that until the summer of 1915 no very severe strain was put upon medical administration. There was a low rate of sickness in the expeditionary force during the winter of 1914–15, and no battles occurred in which the casualties were so considerable that absence of a full medical personnel led straight to disaster. The defects in the care of the sick and wounded, which afterwards proved so lamentable, were existent during the opening phases of the campaign, but the dangers thus portended were not vividly realised, and there was no persistent representation on the part of the principal medical officer, Surgeon-General HEHIR, that the defects must be made good lest the horrors, which actually occurred later, should ensue. Then came the extension of military operations, the first substantial lengthening of the lines of communication being in May, 1915, up to which time there is evidence to show that, although there had been nothing in the medical administration that could be considered a breakdown, the snapping point in a strained cord was being reached. Surgeon-General HEHIR'S work had been very good, and its success had obscured his sense of the risks that were being taken; but what an efficient officer he was is proved by his strenuous work during the siege of Kut-el-Amara, which lasted 147 days. Surgeon-General HATHAWAY succeeded Surgeon-General HEHIR as principal medical officer to the expedition, and this officer appears to have completely misunderstood the position. Already at the battle of Kut-el-Amara the field ambulances were insufficient in number, the river transport used for evacuating the wounded proved unsuitable, the arrangements for clearing the battlefield were inadequate, and the hardships suffered were great. After the battle of Ctesiphon, which took place in November, 1915, there was, says the Mesopotamia Commission, a complete breakdown, and the circumstances which followed this battle were fully reported upon by a commission appointed by the Government of India to inquire into the medical arrangements in Mesopotamia. By this time the Government of India could not conceal from themselves what all the world knew—namely, that something desperately wrong in the medical machinery had displayed itself. The Commissioners selected were Sir WILLIAM VINCENT, Major-General BINGLEY, and Mr. E. A. RIDSDALE, and their report on the evidence placed before them revealed the medical establishment available for the expedition as quite inadequate to the demands made upon it. Their report is published in full as an appendix to the Mesopotamia Report, and the Mesopotamia Commission endorses substantially, having fuller evidence before it, the findings of

the earlier investigation. After the battle of Ctesiphon, when there were 3500 wounded, there were no proper methods of evacuation—indeed, the first hospital steamer appeared in the river in March, 1916, three to four months after that battle, and one year and five months after the campaign commenced. Yet on Dec. 7th, 1915, Sir JOHN NIXON telegraphed to the Secretary of State for India to say that the wounded had been satisfactorily disposed of, that their general condition was satisfactory, and that the medical arrangements in circumstances of difficulty had worked splendidly. It appears that this telegram was drafted by Surgeon-General HATHAWAY. This, indeed, was a terrible misuse of reticence, as the Commissioners term it, and ten days later a detailed report of the evacuation of the wounded from Ctesiphon was sent from which no one could have gathered that anything untoward had happened. A hushing-up policy was being pursued for as long as possible.

But this policy could not succeed indefinitely, for a large public, both at home and in India, knew something of the tragedy that had been enacted. Major CARTER, I.M.S., who was in medical charge of a hospital ship at Basra waiting for wounded from Ctesiphon, made an independent report contradicting the optimistic remarks of Surgeon-General HATHAWAY, and took thereby that grave risk of meeting with official disapproval which others dared not face—how real that risk was is sufficiently shown by the monstrous fact that for his independent action he was stigmatised as "a meddlesome interfering faddist" and threatened with arrest and degradation. This, to pass from the great imperial to the small local sphere, is exactly what happens to a medical officer of health who publishes in his annual report reflections on the apathy of a sanitary authority. The spirit is one that must be uprooted, and we trust that in the Mesopotamia Report will be found the necessary tools for eradication. We do not call for any penal sentences upon individuals involved in this sorry tale of misery unnecessarily inflicted upon men who were wounded and dying in their country's cause, but the Mesopotamia Report will have failed in its object if it does not make impossible such tragedies in the future. Where the medical arrangements of an expedition are in question the representations of scientific experience must be taken into proper account, and the medical officers in places of principal responsibility must know that their demands will be listened to with an anxious desire to meet them, instead of feeling that the less trouble they give the sweeter will their official life be. It emerges from the Mesopotamia Report that the executive medical officers, one and all, did their duty fearlessly—they suffered and died with the men; the fault lay with those supreme authorities who in times of peace had starved the Indian Medical Service, and who, when in charge of the military and political conduct of the war, sought no medical guidance, or having received it did not follow it, and whose attitude towards those who tried to impress upon them the medical aspects was one of resentment or apathy.

The Economic Production and Distribution of Milk.

WE are glad to note that the Committee appointed in April by the President of the Board of Agriculture to inquire into the production and distribution of milk have issued an interim report dealing with the possible shortage of milk next winter. We agree with the committee that this aspect of the problem calls for immediate attention, as any difficulty in obtaining milk is a serious menace to child welfare. Later we may expect the Committee to deal with the complex problem in various aspects of maintaining milk production at its pre-war level, and we are sure that they should aim at an actual increase; but for the present it is well to speed up economical methods at once in order to avoid a shortage after the period of milk harvest is over. There can be little doubt that great economies could be soon effected if producers would fall into line.

The Committee state, for example, that the outpu of dried milk can be so increased as to add a least 50 per cent. to the supply. They find tha there are in Great Britain some 30 or 40 installa tions for the manufacture of dried milk with a actual total output of between 2000 and 3000 ton equivalent to some 450,000 to 675,000 gallons c liquid milk. Besides these, there are a larg number of factories for the manufacture of con densed milk, and there is every reason for believin that at the present time these plants and fa tories are not all working to their fullest capacit Here, surely, is a splendid opportunity for takir immediate steps to get the maximum outp from all milk-drying and milk-condensing plan during the next few months. The Committee a satisfied that dried and condensed whole milk a useful and reliable substitutes for liquid milk, the main point for the present being to secure t preservation of milk and an increased store provide against the times of shortage when th come. The general principle thus enjoined ca for little criticism, but it must be remembered th the various methods of preservation have th limitations as to the period over which the c densed product will last in a sound state. It doubtful whether there is sufficient accommo tion in refrigerators for keeping such produ the cold storage at present available being, believe, fully employed for the preservation other food products. Again, even milk c densed with a large percentage of suga this may amount to nearly 50 per cent.—is guaranteed by the manufacturers to keep in more than three months, while it is still m difficult to give a warranty of condition in the c of milk condensed without sugar. It may be marked also that manufacturers who use sugar preservative will soon be deterred from so doin consequence of the greatly advanced cost. Con to completely dried milk, there would seem t a bigger future for this product than for the densed variety, assuming that satisfactory s are taken to ensure its keeping sound ov reasonable time, but the fatty contents are p

to get rancid unless the product is packed under special precautions. There is no difficulty in keeping dried skim (i.e., fatless) milk sound, but it is whole milk which the Committee have in mind, and it is the conservation of whole milk which is first in importance.

The report is only preliminary, but its publication may well be called timely owing to the urgency of the points which have been dealt with. There are three main directions in which the Committee propose that action should be taken, clearly realising the nature of the situation. First of all, the uncertainty and sense of insecurity which exist among dairy farmers, particularly in respect of prices, labour and feeding stuffs, should, in the Committee's opinion, be immediately reduced as far as possible. Then the surplus summer milk should be used to the best national advantage in ways which they indicate; and finally the loss of milk during the warm months of the year by waste or souring before it reaches the consumer should be reduced. We are much inclined to share the opinion of the Committee that in existing circumstances the sooner milk is available in a dried and soluble form the better. Then on the addition of water the powder is reconstituted as original milk, and its use has advantages for the community, not only of health but of economy and convenience.

Annotations.

"Ne quid nimis."

A WAR-TIME PATHOLOGICAL MUSEUM.

THE war-time museum continues to monopolise the time and energy of the entire Museum staff of the Royal College of Surgeons of England, and the Conservator, Professor Arthur Keith, F.R.S., in his annual report, just issued, narrates the history of this collection, undertaken at the request of the Director-General of the Army Medical Service, to which we have already briefly alluded.[1] Specimens came in at first very slowly, only 500 having been received at the date of the last annual report in June, 1916. But in the present year more than twice that number have been added, and there are now over 1500 specimens in the collection. A service was established under Lieutenant-Colonel T. R. Elliott, F.R.S., between the pathological laboratories attached to base hospitals and casualty clearing stations in France and the Museum of the College, and at a later date a similar service was arranged between the pathological departments of military hospitals at home and the Museum by Lieutenant-Colonel Sir John Bland-Sutton, who was appointed by the Army Council as its representative in the management of the collection. There was at first no intention of exhibiting the collection, and Professor Keith traces the genesis of this idea in the following terms:—

> Towards the close of 1916 it became apparent to all who realised the educative value which such a collection possessed for Army medical officers that its exhibition could not await the end of the war. Its historical value would remain unimpaired, but its present educative value would be lost. It was realised that it should be made available for study as soon as was possible. In July, 1916, the French Army medical staff opened a museum in Paris (at the Val-de-Grâce) for the exhibition of specimens of every kind connected with military surgery and hygiene. The Director-General of Medical Services in France asked Lieutenant-Colonel T. R. Elliott to visit and report on the Val-de-Grâce Museum. A favourable report was returned; it was found that the museum was enthusiastically supported and visited by officers belonging to all branches of the medical staff of the French Army; it served as a centre for the dissemination of the best available knowledge. The project of an immediate exhibition of military specimens was then taken up by the chiefs of the Medical Department of the Army at home and abroad. In December, 1916, the Army Council requested the Council of the College to suggest the best means "for placing on exhibition the collection of war specimens now assembled in the storerooms of the Museum." The Council of the College undertook to do the best it could. At its request Mr. S. G. Shattock, F.R.S., assisted by Mr. Cecil Beadles, undertook the selection and preparation of specimens for exhibition. In the selection of specimens of a surgical nature they were assisted by Captain Raymond Johnson, R.A.M.C. A nucleus for the exhibition was at once assembled in the hall of the Museum by Mr. Shattock. In this nucleus were assembled specimens which were chiefly derived from the museums of the College and of St. Thomas's Hospital Medical School illustrating the wounds of former wars—Peninsular, Crimean, Franco-Prussian, and South African. A section illustrating the lesions of the present war was also included. Drawings and photographs were added. To this modern section additions are being constantly made as the labours of Mr. Shattock and Mr. Beadles progress.

The aim of those who are responsible for the management of the collection is to have an extensive series of specimens for exhibition in the first week of October, 1917, to meet the needs of the medical officers of the Army. Although the scope is less wide than the collection at the Val-de-Grâce, the collection at the Royal College of Surgeons of England will include not only actual specimens of wounds of all parts of the body, and of the diseases and consequences of military wounds, but also samples of the missiles causing wounds, the various means of treatment adopted, and the results obtained so far as such results can be accurately represented by drawings, photographs, casts, and models. Mr. Shattock, who reports on the pathological department, states that at present there is a very full collection of gunshot injuries, both old and recent, available for examination and study. The valuable series of pathological drawings made by Mr. A. K. Maxwell in France will form part of the exhibition. Means and material for such a central or national exhibition offer no difficulty, but in the lack of skilled museum assistants Professor Keith sees a great hindrance to the carrying out of the scheme, and he concludes that, unless energetic measures are taken to remedy this deficiency, great difficulty will result in dealing with the mass of material now accumulated. We trust that the irksome delay may be capable of removal.

[1] THE LANCET, 1917, i., 116.

THE DEBT OF MEDICINE TO THE DISCOVERY OF DYES.

IN a series of articles on Science and Industry, published in a supplement to last Saturday's issue of the *Manchester Guardian*, appears one by Dr. C. W. Saleeby on Dyestuffs in Medicine, in which the remarkable influence on the progress of medical science encouraged by the discovery of the coal-tar dyes is discussed. The subject is not in the least new to medical and scientific audiences, but it is none the less interesting. As we have often pointed out, the selective action of dyes on micro-organisms was a step of the utmost diagnostic value by adding to the efficiency of microscopic examinations, and now we are turning this selective action to account in the treatment of numerous infections. The dyes, in short, have laid the foundations of a system of chemico-

therapeutics which promises to be of distinct importance in combating some of the worst human ills. The discovery of a dye substance—e.g., such as acriflavine—which appears to discriminate between friend and foe, only attacking the latter, suggests the possibility of finding further selective substances which are inimical to the human organism, but destructive to the particular disease organisms which are known to have invaded the host. The possibility of successful treatment on these lines is real. Little could William Murdoch have conceived in 1792 when he distilled coal for the first time for producing gas for lighting his house—thus laying the foundations of the coal-gas industry—what great potentialities lay hidden in the distillation whose by-products now yield us such an astonishing stock of valuable synthetics, antiseptics, dyes, and explosives.

THE CROONIAN LECTURES.

Colonel Adami's third Croonian lecture dealing with the agencies producing adaptation to disease in the higher animals commenced by drawing from the data brought forward thus far[1] the conclusions that bacteria are capable of being modified by alterations of environment of certain orders; that the modifications conform with Herbert Spencer's "direct adaptations"; and that not some, but all the microbes subjected to particular orders of alteration of environment exhibit the particular modifications; the hypothesis of "chance variation" in one direction with survival of the fittest is incapable of explaining the phenomena. After calling attention to two examples of direct adaptation in protozoa higher than the bacteria—namely, the conversion of negative into positive chemiotaxis in the myxomycete, Fuligo, and Musgrave and Clegg's observations upon the accustomance of Entamœbæ from the intestine to new bacterial and tissue foodstuffs, Colonel Adami pointed out that the multiplicity of studies of the last quarter of a century upon immunity afforded deep insight into the processes involved in direct adaptation in the higher animals, though no single biologist had dealt seriously with the significance of modern discoveries in relationship to adaptation and evolution. He adduced typical examples to demonstrate that immunisation of the individual is simply direct adaptation. The subjects are immunised so that they can withstand the lethal dose many times multiplied; the blood serum of the immunised animals contains bodies which neutralise the toxin; the cells of the body of the immunised animals elaborate and discharge the antitoxin in great excess over the amount of toxin originally introduced; and in some cases they elaborate this for weeks and months after the introduction of the toxin. What is this but acquirement of a new property which cannot possibly be regarded as the calling into activity of a property previously possessed? The acquirement is something positive, and there can be no alternative hypothesis of loss of inhibiting factors and no possibility of ascribing the new property to the persistence of a chance variation. Antiricin can be produced in rabbit or mouse with absolute certainty; there is here no alternative explanation of "the survival of the fittest," and a parallel is afforded by the production of diphtheria and tetanus antitoxins, the cells which absorb and fix the toxins producing the antitoxins. The more widespread bacteriolytic immunity developed against members of the typhoid-coli group, cholera spirilla, micrococci were held by Colonel Adami to be an acquired power of digestion of unfamiliar proteins. Colonel Adami concluded his third lecture by dealing with the question of the inheritance of acquired pathological conditions in the higher animals, and showed that we have precise evidence of such inheritance, direct and indirect, which fits in wholly with our routine medical experience of the danger of marriage in families where like nervous or other defects are exhibited. Instances of direct inheritance of acquirements are, and must be, rare and limited to cases in which the influences which, affecting the body cells, modify their internal secretions, and through these internal secretions so tell upon the germ cells and their metabolism as to set up similar defects and similar disorders of the internal secretions in the offspring; but we know, as a matter of fact, that the endocrine organs as a class have a profound influence upon the generative organs and upon growth, and, from general experience, that metabolic disorders—gouty and "rheumatoid" states, defect and excess of internal secretions—are heritable. The results of medical research strongly support Darwin's earlier contention that congenital variation is to be attributed to the action or influence of changed conditions upon the parental body, and through it upon the reproductive germs. At the same time they indicate the existence of a limited group of cases in which the Lamarckian principle is exemplified—namely, that of identical inheritance of conditions acquired by the parent. The concluding lecture of the series, which dealt especially with the physico-chemical basis of immunity and evolution, was delivered on June 26th, and will be published in full in THE LANCET shortly.

[1] THE LANCET, June 16th (p. 921) and 23rd (p. 961).

EPSOM COLLEGE.

THE annual general meeting of the Governors o Epsom College was held at the office in Soho-squar on June 29th. Sir Henry Morris, the treasurer occupied the chair, and in submitting the annua report drew attention to the fact that the Counci had been obliged to increase slightly the annua school fee charged to boys entering the Colleg in Michaelmas term last year or subsequently Since then, he added, the Council had been enable to raise the salaries of the assistant masters, an they had also presented to each master an immediat bonus, and had instituted a "Provident Fund" fo helping sons of medical men either during thei pupilage at the College or on leaving school. W understand that £100 have already been allocate for this purpose, and that the Council wou be glad to receive subscriptions to this en We are glad to note that in spite of the war tl numbers of the school have not gone down, and tl usual athletic and social life of the place has be maintained as far as possible. Since the la annual general meeting J. M. Crombie has be awarded an exhibition in modern history at Chr Church, Oxford, 11 boys have passed the whole a part of the First Examination for medi degrees of the University of London, and 10 ha matriculated at the same University. The For Exhibition has been given to F. W. Black, t Armstrong Scholarship to J. M. Crombie, the Stc Scholarship to W. L. Martland, the Havila Exhibition to A. F. McGlashan, and the High Scholarship to B. W. Roffey. The Jenks Memo Scholarship was awarded by the Royal College Surgeons of England to J. St. C. Shadwell. The Bartholomew's Hospital Scholarship was awarded F. C. W. Capps, and the Middlesex Hospital Schol

ship to E. T. Bailey. The report showed that over 650 Old Epsomians were serving with the forces, of whom 550 had joined one branch or another since the outbreak of the war. In the roll of honour of Old Epsomians were included 62 who had been killed in action, 8 who had died in hospital, 93 who had been wounded, 6 who were missing, and 4 who were prisoners. Captain A. Addenbrooke, who died from wounds, was a master at Epsom. Forty-five Old Epsomians have been mentioned in despatches, 2 three times, and 3 twice, 1 has been awarded the Victoria Cross, 7 the Distinguished Service Order, 1 the Distinguished Service Cross, and 20 the Military Cross. After the report had been adopted and formal business had been transacted a cordial vote of thanks to the chairman, moved by Sir James Reid and seconded by Sir R. Douglas Powell, was carried unanimously.

A DEATH FROM SCURVY.

IN a report of Dr. A. K. Chalmers, the medical officer of health, submitted to a meeting of the Health Committee at Glasgow on June 27th, a death from scurvy was registered as occurring in one of the Poor-law hospitals of the city. The significance of the event being obvious in view of the present conditions of the distribution of food, Dr. R. M. F. Picken accordingly undertook an inquiry into the circumstances under which it had occurred. With the courtesy of the medical superintendents of Barnhill and Merryflatts Hospitals, he was able rapidly to collect the following history:—

Under normal conditions three or four cases of scurvy are admitted annually to each of the Poor-law hospitals. Since the middle of February, however, 50 cases have been admitted, distributed thus:—Feb. 15th to March 14th, 2 cases; March 15th to April 14th, 7; April 15th to May 14th, 15; May 15th to June 14th, 22; since June 15th, 4. The experience of these hospitals is that under ordinary circumstances in Glasgow the disease is confined to males, and the present outbreak preserves this feature. Not a single case in a female has been recognised. Moreover, the disease, so far as it has been recognised, appears to be occurring only in men who are dwellers in model lodging-houses, or who live alone, a fact which suggests indifferent attention to the selection and preparation of meals. The medical superintendent of Barnhill is of opinion that the origin lies in the recent shortage of potatoes, this being the only form of fresh vegetable food which this class of patients is accustomed to prepare. From Dr. Liston it was learned that the history of the Merryflatts patients conforms with this in more than half the cases, although in others it has been impossible to ascertain that any alteration in diet had occurred over a prolonged period before the onset of symptoms. Apart from the lodging-house population occasional cases would appear also to be occurring among the general community, and according to the superintendents of the Royal Western and Victoria Infirmaries several cases, seven in all, have been admitted for treatment since April, and one of these from a rural district near Glasgow.

Deaths from scurvy are now exceedingly infrequent in this country. In Scotland, in 1912, 4 were registered; in 1913, 3; and in 1915, 2; while in Glasgow during these years only 1 is known to have occurred. The facts as disclosed in the inquiry have a practical importance for the public at the present time. Potatoes have long been known to possess antiscorbutic properties. Their richness in starch has probably led to the too easy assumption that during the present scarcity an equivalent may readily be obtained from rice or other cereal also rich in starch. It was found, for example, that the Poor-law patients replaced the potato by bread, but neither bread nor rice has the antiscorbutic properties of the potato. These can most readily be obtained from fresh vegetables. All forms of fresh vegetables are valuable for the purpose, but cabbage has an established reputation for its antiscorbutic properties. Fresh vegetables, however, in one form or another are essential if the risk of scurvy is to be avoided, and where the ordinary forms are scarce a readily obtainable substitute, especially at the present time, may be found in the plentiful supply of young turnip plants which are being uprooted in singling, and which can readily be cooked much as spinach is cooked.

RESEARCH DEFENCE SOCIETY.

THE annual meeting of this society has again been postponed owing to necessities of war, but a report has been issued dealing with the period between June, 1915, and the present time. Little propaganda work has been required, and neither in Parliament nor in the Law Courts has need arisen to defend research. The report, which is signed by Lord Knutsford as chairman, refers to the growing appreciation by the public of the great advances in preventive medicine which we owe to research, and the belief is expressed that in the years which are ahead there will be hardly any need for the sort of controversy in which the society has so often engaged in the years before the war, the best opportunities for usefulness being found not in dispute with antivivisection societies but in wide non-aggressive educational work. The effectiveness of the society's work has been greatly increased by the amalgamation with it of the Association for the Advancement of Medicine by Research. The address of the society is 21, Ladbroke-square, W.

THE PANEL MEDICO-POLITICAL UNION.

THE Panel Medico-Political Union has issued its annual report, and the agenda at the annual meeting may be taken as a pronouncement upon the present shortcomings of the Insurance Acts from the point of view of a considerable body of panel practitioners. Suggestions were also made as to desired improvements, the proposals made varying in the degree of importance attaching to them, as well as in the practical probability of the demands made being acceded to. One of the resolutions before the meeting, for example, the carrying out of which would be the most acceptable and one, at the same time, which ought to be reasonably practicable, relates to the period of final settlement for the year's work. The resolution laid before the Union as to this was—

That the Commissioners should be urged to expedite the final settlement of sums due to practitioners, so that in no case it is delayed after the first quarter of the ensuing year. (Resolution I. B.)

It is difficult to believe that the making up of accounts with sufficient promptitude to ensure this end should be beyond the competence of the clerical staffs employed when peace is restored and when clerical staffs have returned to their normal duties. All matters of improvement involving extra work in large national undertakings not directly concerned with the great national undertaking of winning the war must, however, necessarily be delayed until that desired consummation be attained. There is more room for scepticism as to whether the next resolution (I. C) will receive the same consideration as the demand for prompt payment of earned money. The latter resolution asked—

That the Practitioners' Fund should be credited with interest at the rate of 5 per cent. on all moneys ultimately ascertained to be due to practitioners at, and outstanding after, 31st December of each year.

To charge interest upon money due in respect of medical practitioners' accounts from the date of

their becoming due is hardly customary in the case of general practitioners, and the financial position under the Insurance Acts will probably not be found to be such as would impel their administrators to generosity. Resolution I. E, asking that a subcommittee of the Union should report on the method of remuneration in rural areas, should lead to the removal of grievances affecting practitioners whose work differs widely from that of their urban colleagues. The demand in Resolution V. for a scheme of superannuation for panel practitioners suggests a leaning towards a system of, or approximating to a, State Medical Service, which is inconsistent with a desire to avoid State service believed to be generally felt by the medical profession. The observations made in the Panel Medico-Political Union's report upon the practical aspects of the proposed Ministry of Health in relation to insurance practice may be commended to the attention of panel practitioners as dealing with a subject upon which they are well entitled to form opinions and to make them known, and the same may be said with regard to the paragraph on p. 7 of the report upon "War Bonus or Increased Capitation Fees." The justice of the latter demand does not depend only upon the increased work devolving through war upon the panel practitioner, but also upon increased prices which have been met by large increases of the wages earned by the majority of his patients. If medical attendance for the working classes is recognised by Parliament as desirable, which the passing of the Insurance Act admits, it must also be recognised that reasonable remuneration is due to the medical practitioner in respect of the duties imposed upon him.

WAR BREAD AND ITS FAULTS.

NUMEROUS complaints having arisen in many quarters as to the indigestibility and unwholesomeness of Government regulation bread, the Ministry of Food has appointed an expert committee to inquire into the matter. In a preliminary report issued this week the investigations, so far, appear to show that the bread made from this flour when properly baked is perfectly wholesome, but it is pointed out that there are unavoidable local variations in the flour used and in the methods of bread baking, and it is with points such as these that the committee are now dealing. We have received a communication on this subject from the Metropolitan Committee for War Savings. From this statement it appears that the complaints from the general public come under the following heads: (1) the bread is tasteless and quickly palls on the palate; (2) it is rough on the tongue; (3) it does not appear to be digestible and often produces symptoms of indigestion; (4) in children it has sometimes produced skin eruptions; (5) old people especially find it difficult to assimilate; (6) it often tastes musty and soon goes mouldy; (7) it becomes "sticky" and gummy (ropy bread); and (8) it soon becomes stale and uneatable. Practical suggestions dealing with these points with a view to improving G.R. bread refer to the desirability of obtaining a greater uniformity of qualities and properties in G.R. flour, to limiting the addition of other cereals, to eliminating husk, to reducing the mixed flours to a finer state, to improving the keeping qualities of the bread, to the importance of impressing upon the public the necessity of submitting the bread to thorough mastication, and, lastly, to the question whether in summer the restriction that bread must not be sold until 12 hours old should be suspended.

THE LANCET, VOL. I., 1917: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 30th will be ready in July. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

TENTH REPORT ON PLAGUE INVESTIGATIONS IN INDIA.[1]

MANY valuable additions to our knowledge of plague have been made as the result of the investigations carried out in India under the direction of the Advisory Committee appointed jointly by the Secretary of State for India, the Royal Society, and the Lister Institute. Their reports are always eagerly awaited, and are studied with deep interest and also with much profit. The latest report, the tenth, has recently been issued as "Plague Supplement V." of the *Journal of Hygiene*.

One of the puzzling problems of plague in India is its unequal distribution in that country, and its incidence in some provinces has displayed the same inequality among constituent districts. In previous reports this subject has been partly dealt with, and in the present report a special study has been made of the unequal incidence of plague in the United Provinces of Agra and Oudh, by Majors T. H. Gloster and F. N. White, of the Indian Medical Service, in conjunction with Assistant Surgeons A. N. Mukharji, J. S. Roy Chaudhuri, and C. C. Mitra, along with Sub-assistant Surgeons G. C. Mandel and Manji Ram. Their investigations were begun in the early part of 1911, and their object was to elucidate several points of interest in connexion with the geographical distribution of plague, and with an endeavour to find an explanation of the variation in the degree of intensity of the infection exhibited by several districts in the United Provinces. After giving a general description of the area in question, its physical geography, climate, and population, a summary follows of the local epidemics of plague which have occurred during the decade ended in 1911. Four problems appeared to call for special investigation—namely: 1. Why does the city of Lucknow suffer less severely and less persistently from plague than the city of Cawnpore which is comparatively adjacent? 2. Can any explanation be offered as to why the district of Ballia is the most persistently and severely infected district in the United Provinces? 3. Why do the districts of the Bundelkhand—namely, Jhansi, Jalaun, Banda, and Hamirpur—suffer less severely from plague than the districts of the Gangetic Plain? 4. Can any explanation be offered for the unusually severe epidemic which occurred in the Muzaffarnagar district in 1906–7 and in the Muttra district in 1904–5?

1. *Plague in Lucknow and Cawnpore Compared.*

Lucknow, at the Census of 1911, had 259,798 inhabitants including cantonment, while Cawnpore had 178,557. The causes suggested in the report for the greater incidence of plague in the latter town are: 1. It is a much more important trade centre than Lucknow and has more intimate trade relations with many infected places in India; it is thus exposed to greater risk of infection. 2. Cawnpore is a more rat-infested city than Lucknow, so that when plague infection has been brought to it the chance of the disease becoming permanently established is greater. 3. Cawnpore's extensive trade in grain, the construction of its houses, the density of its population, its narrow streets, and the customs of the inhabitants, living as they do in cl

[1] Plague Supplement No. V., Journal of Hygiene; Tenth Report on Plague Investigations in India, issued by the Advisory Committee, May, 1917. The Cambridge University Press. Pp. 106, with Maps and Charts. Price 7s. net.

proximity to their grain stores and their domestic animals, bring a large section of the people into close association with rats, which convey the plague infection to them by means of infected fleas. 4. The number of fleas found on the rats in Cawnpore is larger than in Lucknow and attains a maximum at an earlier period in the plague season, thus favouring the establishment of infection at an earlier date.

2. *The Severity and Persistence of Plague in the Ballia District.*

Ballia has the unenviable reputation of being the most persistently and severely plague-infected district in the United Provinces, and closely related with this is the persistence of the disease through the non-epidemic season. This latter factor, it appears, may be correlated with (1) the observed high prevalence of fleas in June, July, and August; (2) the meteorological observations which show that in these three months, in 1911, the relative humidity in Ballia was higher than that recorded at any other station in the United Provinces, while Rurki and Gorakpur alone recorded lower monthly mean temperatures during this period. Although the investigators could find no constant relation between the climatic conditions and plague mortality in one district as compared with another, they show that within a given district the relative humidity during the epidemic season appears to influence the mortality, a high humidity during the winter months being associated with severe plague. The greater density of population in the Ballia district may also be favourable to the diffusion of the disease.

3. *The Smaller Incidence of Plague in the Bundelkhand.*

The Bundelkhand includes the districts of Jalaun, Jhansi, Hamirpur, and Banda, and forms a part of the Central India plateau. It is peculiarly liable to suffer from either an excess or a deficiency of rain. Taking the Jhansi district as representing the Bundelkhand, the reporters sum up the salient features of plague incidence in it as follows: (1) Epidemics have only occurred when the atmospheric humidity has been considerably above the normal percentage; (2) epidemics in Jhansi have coincided with epidemics in the Native States of Bhopal and Gwalior, such small imports of grain as are brought to Jhansi for local consumption being derived from those States; (3) it is noteworthy that in 1906–7, although the atmospheric humidity was high and plague was severe and widespread in other parts of the United Provinces, the Jhansi district escaped infection, together with the Central Indian Native States; and (4) the epidemic in Jhansi city in 1911–12 failed to spread throughout the district, although nearly three-quarters of the inhabitants had taken refuge in the surrounding villages. It is possible that this failure of plague to spread was due to the very dry weather which prevailed in March and apparently brought the epidemic rapidly to a close. Plague does not tend to spread in the Bundelkhand except in unusually humid years, very dry and hot climate being unfavourable to the prolonged existence of rat-fleas when separated from their host.

4. *The Severe Epidemics in Muttra and Muzaffarnagar.*

In the Muttra district in 1904–05 no fewer than 51,002 persons died from plague, giving the enormous death-rate from the disease of 66·8 per 1000 of the population. In the Muzaffarnagar district in 1906–07 there were 49,745 fatal cases, giving the very high plague mortality rate of 56·7 per 1000. In both of these districts the severe epidemics were associated with unusual humidity during the winter and spring months. The association of unusual humidity during the winter months in certain districts, with severe epidemics of plague, is so constant a phenomenon that the authors feel justified in concluding that one stands to the other as cause and effect. There are also grounds for believing that this cause exercises its effect mainly through its influence on the length of the life of rat-fleas when separated from their host, for the longer a rat-flea is able to survive in such circumstances the greater are its opportunities in an infected area for conveying the plague bacillus either to rats or man.

The Influence of Saturation Deficiency and of Temperature on the Course of Epidemic Plague.

Dr. Ralph St. John Brooks, of the Lister Institute, contributes a report in which he calls attention to the prompt decline of plague epidemics in Northern India with the onset of the hot weather, and he points out that this has led many observers to conclude that the establishment of a critical temperature is the most important factor in checking the course of the infection. The term "saturation deficiency" means the difference between the actual tension of aqueous vapour present in the atmosphere at the temperature in question and the tension of aqueous vapour that would be present in a saturated atmosphere at the same temperature. As a result of his own investigations Dr. Brooks forms the opinion that: 1. Plague does not maintain itself in epidemic form when the temperature rises above 80° F., accompanied by a saturation deficiency of over 0·30 of an inch. 2. Plague epidemics are rapidly brought to an end in the presence of a high saturation deficiency, even when the mean temperature throughout and after the termination of the epidemic has been considerably below 80° F. 3. Plague epidemics may commence and increase in intensity when the mean temperature is well above 80° F., provided that the saturation deficiency is below 0·30 of an inch. 4. In some districts in India, and in certain tropical islands, such as Java and Mauritius, where the climatic conditions are at all times of the year favourable to the incidence of plague, the disease may occur indifferently at all seasons. The adverse influence of high temperature and saturation deficiency may be explained by their effect on the duration of life of the rat-flea when separated from its host. Dr. Brooks's paper is illustrated with 18 charts; it is well worth study by all who are interested in the epidemiology of plague.

NATIONAL BABY WEEK.

DURING the past week a special effort has been made by 200 or more towns and villages throughout the United Kingdom to draw the attention of the people as well as of the local authorities to the value of child life and to the need for doing everything possible to ensure a healthy motherhood and babyhood. In London the care of motherhood and infancy was made the text of addresses in many places of worship on the Sunday. On Monday the Queen opened an exhibition at the Central Hall, Westminster, illustrating in graphic way the essential features of infant welfare propaganda. At one of a series of important conferences held in the same hall the pension scheme for mothers as carried out in the United States was explained by Judge Neil, of Chicago. At the Guildhall, also on Monday, three Ministers of the Crown—Lord Rhondda, Mr. H. A. Fisher, and Mr. Hayes Fisher—addressed a representative gathering at which the Duchess of Marlborough proposed, and Mr. Ben Tillett seconded, a resolution pledging those present to use their influence to secure improved housing and sanitation, together with adequate provision in their own districts for the care of maternity and infancy. To-day (Friday) the best means of increasing the supply of practising midwives is the topic of a meeting held under the auspices of the Association for Promoting the Training and Supply of Midwives at 34, Queen Anne's-gate, Lord Balfour of Burleigh presiding; the speakers include Dr. E. W. Hope, medical officer of health of the city and port of Liverpool. The subject of housing also claimed the attention of a representative meeting at Brighton, when the mayor compared the town to a ragged garment with a golden fringe. Behind its beautiful sea-front Brighton had, he said, many ragged patches, and he trusted that after the war old houses would be pulled down wholesale. Sir Arthur Newsholme spoke at this meeting of the necessity for eliminating venereal diseases and for providing maternity homes for women who could not count on proper care at home during confinement. At Liverpool an elaborate programme was carried out during the week, an address being delivered by Sir Francis Champneys on the Promotion of the Welfare of Motherhood and Infancy.

QUEEN'S UNIVERSITY, BELFAST.—At the recent Final Examinations in the Medical Faculty of the Queen's University of Belfast two candidates obtained the M.D. degree. Twenty-nine entered for the M.B., and of these 19 passed. Miss M. Georgina Thompson (daughter of Dr. George Thompson, Bellaghy, co. Derry) was first of all the candidates, for which distinction she gained the £20 exhibition. She was also first in Midwifery, and was awarded the £30 exhibition, and first in Medicine, but as no candidate can hold exhibitions in more than one group this special prize in medicine was divided between Mr. C. J. A. Woodside and Mr. F. Hopkins. Mr. J. Lascelles was awarded the special exhibition in Surgery. First-class honours were given to Miss Thompson, Mr. Woodside, and Mr. Hopkins, and second-class honours to Mr. Lascelles, Mr. R. Meyer, Mr. G. V. Allen, and Mr. F. H. Whyte.

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH:

THE ACTION OF DIGITALIS IN AURICULAR FIBRILLATION.

To the Editor of THE LANCET.

SIR,—In my letter published in your issue of June 23rd I am aware that I was "asking for trouble," and am not surprised that Dr. T. Lewis has joined issue. Dr. Lewis assumes that I doubt the existence of auricular fibrillation, but as my letter dealt almost entirely with the effects of digitalis in auricular fibrillation in mitral stenosis I fail to see how he can have arrived at that conclusion. Indeed, I was induced to enter this controversy by Professor A. R. Cushny's interesting paper,[1] in which he pointed out that the action of digitalis in auricular filbrillation which occurs pathologically in man differs materially from that which is observed in the same condition induced experimentally in animals. The vagi being put out of court, the whole controversy turns on whether the beneficial action of digitalis in auricular fibrillation in mitral stenosis is entirely due to its action in producing a certain degree of heart-block. My contention is that mere slowing of the heart is an insufficient explanation of the marked improvement that follows, and that it is the action of digitalis in restoring the tone of the exhausted muscle so that it contracts more powerfully which plays a more important part than the cutting off of a certain number of stimuli from auricle to ventricle. The arguments I brought forward in favour of this were fully stated in my first letter, in which I laid stress on the serious disturbance of the hydraulics of the circulation resulting from mitral stenosis, which could not be rectified by mere slowing of the heart. Dr. Lewis entirely ignores these points, and in traversing my statement that digitalis is of value in heart failure associated with mitral incompetence he goes so far as to say, in speaking of its effects in auricular fibrillation, that "There is no comparable series in which, with a normal sequence of chamber contraction, digitalis has been shown to have a similar effect or, in fact, *any striking beneficial effect*." (The italics are mine.)

As Dr. Lewis will not accept my statements as to the value of digitalis in heart failure, let me quote Sir James Mackenzie,[2] who says of digitalis: "The condition of heart failure where it acts best is where there is dilatation of the heart with healthy *muscle fibres that have been exhausted in the endeavour to overcome abnormal resistance*. This effect is best seen in old rheumatic affections of the heart, but it may also be observed in other cases with a fair amount of healthy muscle." I think most clinicians will endorse this statement.

Dr. Lewis complains that I use the term "neurogenic" in connexion with the impulses transmitted by the narrow strand of specially differentiated muscle in the auricular-ventricular bundle. Yet this plays so important a part in conduction and in the phenomena of heart-block that it subserves the function of a nerve rather than that of a mere muscle. Dr. Lewis also criticises my use of the unscientific colloquialism "pick-me-up," but I note that on the approach of "Baby Week" he waxes pathetic on his children being mauled and scolded by a childless neighbour, and himself thus lapses from the path of strict scientific phraseology.

In my first letter I made no personal attack of any kind, but simply wished to raise the question whether the beneficial effects of digitalis in auricular fibrillation could be attributed wholly to its producing partial heart-block and its action on the cardiac muscle be entirely disregarded. This is the point at issue.

I am, Sir, yours faithfully,

JOHN F. H. BROADBENT.

Seymour-street, W., July 2nd, 1917.

[1] THE LANCET, June 9th, 1917, p. 865.
[2] Heart Disease, first edition, p. 278.

BENEDICT'S TEST FOR SUGAR IN THE URINE.

To the Editor of THE LANCET.

SIR,—I have lately had a number of complaints from medical men that they have been unable to obtain satisfactory results when testing urines for sugar with the Benedict solution supplied to them by the local chemists. On inquiry I find that in every instance the solution had been prepared according to the directions given in a trade publication, and that this solution is that described by Benedict for *quantitative* work, although the fact is not stated. It may be helpful, therefore, if I point out that Benedict's *qualitative* solution, employed in testing for sugar, is prepared as follows. With the aid of heat dissolve 173 grammes of sodium (or potassium) citrate and 100 grammes of anhydrous (or 200 grammes of crystallised) sodium carbonate in about 700 c.c. of distilled water. Dissolve 17·3 grammes of pure crystallised copper sulphate in about 100 c.c. of water. Cool the solutions to the room temperature, pour the second into the first, slowly and with constant stirring; make up to 1000 c.c. with distilled water.[1]

The difficulties of having two separate and distinct solutions for qualitative and quantitative work may be avoided by employing the modified Benedict solution and methods of estimating sugar in the urine and blood I recently described.[2]

I am, Sir, yours faithfully,

Nottingham-place, W., July 3rd, 1917. P. J. CAMMIDGE.

ACUTE INTESTINAL OBSTRUCTION BY MECKEL'S DIVERTICULUM.

To the Editor of THE LANCET.

SIR,—In your issue of June 30th Lieutenant-Colonel E. Mansel Sympson records a case of acute intestinal obstruction by Meckel's diverticulum. Recently I operated on an infant seven days old for a similar condition. At birth the child had a patent Meckel's diverticulum protruding from the umbilical cord just beyond its attachment to the skin. The child passed flatus and the bowel acted through this abnormal opening and also by the natural passage. On the fifth day after birth the child commenced to vomit and gradually obstruction of the intestine became complete. On the seventh day the abdomen was opened The small intestine (the ileum) was found to have invaginated itself into the Meckel's diverticulum, dragging with it the mesentery. This case is somewhat similar to that recorded by Lieutenant-Colonel Sympson, and would suggest a tendency in cases of Meckel's diverticulum for the ileum to pass into the diverticulum and cause intestinal obstruction.

I am, Sir, yours faithfully,

E. DRYBROUGH-SMITH, M.D. Edin.

Shebbear, Devon, June 30th, 1917.

THE SIGNIFICANCE OF CAPILLARY MARKINGS IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The evidence given by Dr. R. Crawshaw Holt respecting this phenomenon in THE LANCET of June 30th reads ambiguously. For example, he notes that of 351 individuals examined, 147 were between ages 6 and 14 years. Of these 147 who had fallen under suspicion of having tuberculous deposits in their lungs—so one gathers from the context—8 showed tubercle bacilli in the sputum. How does he classify the remaining 139?

Again, he speaks of "red" markings. Does he exclude those that are as distinctively blue? Curiously enough, the colour differs in different subjects. It is not uncommon to find only one of these little striæ. Does he class such as positive or negative?

Of the 63 which showed bacilli, which, therefore, his statements allow us to regard as indubitable instances, 40, or approximately two-thirds, showed no capillary markings. The observations being apparently uncontrolled, there is no

[1] Glycosuria and Allied Conditions, p. 33.
[2] THE LANCET, April 21st, 1917, p. 613.

basis for an inference that the remaining 23 showed these markings because they had pulmonary tuberculosis. It may have been so, but is not demonstrated by this evidence.

In a letter to THE LANCET of April 8th, 1916, I stated that the phenomenon in question is by no means rare in young people who give no proof or even suspicion of having intrathoracic tuberculous deposits.

I am, Sir, yours faithfully,

Liverpool, July 1st, 1917. EDMUND HUGHES.

*** Far more evidence is wanted before this matter can be usefully discussed further.—ED. L.

RHUBARB LEAVES AND FLOWERS AS A VEGETABLE.

To the Editor of THE LANCET.

SIR,—The question of the use of rhubarb leaves as a vegetable having acquired some prominence of late in the public press, and certain cases of alleged poisoning as result of this use having been cited, the subject has become important, particularly at the present moment when it is our concern to enlarge rather than restrict the dietetic boundaries. For this reason I am anxious to draw attention to the points which follow, in the hope that they may contribute to the elucidation of the matter and amplify the comments which have already appeared in your columns (May 5th and June 2nd, 1917).

In Queen Elizabeth's time we read that "rhubarb leaves were used as a potherb and considered superior to spinach or beet," whilst "the use of the tender leaf-stalks is, comparatively, of modern date." From the same source we learn that in the *Gardeners' Chronicle* for 1846 the large globular pouch of unopened flowers, when dressed in the same manner as rhubarb, forms a "dish of great delicacy."[1] From another source[2] we gather that the Don Cossacks were accustomed to eat "the shoots and the leaves of Rheum rhaponticum, in springtime, in their soup, as a remedy efficacious against the scurvy." In King Henry VIII.'s time it appears that the common sorrel, *Rumex acetosa*, "was held in great repute" and used "as spinach or in salads."[3] This custom has prevailed down to the present day, especially in France.

Now both of these plants belong to the same natural order, Polygonaceæ, and both present an acidity which, in so far as the palate is concerned, must be counted among their virtues. This acidity is constituted in part by oxalic acid, free or more probably in combination, either as the acid potassium salt, HKC_2O_4, 2 Aq, or as the hyperacid quadroxalate, HKC_2O_4, $H_2C_2O_4$, 2 Aq. It is true that oxalic acid is present also in the tissues of rhubarb in another form, namely, in combination with lime as calcium oxalate, but this salt is so insoluble that to whatever extent it may occur in the leaves of rhubarb it can take no part in their acidity; indeed, we may consider that in this form the activities of oxalic acid are effectively cancelled. It is, however, necessary to remember that in the cooking of vegetables it is common practice to add soda to the water, and, soda salts in general being so soluble, it is reasonable to inquire whether in this way more of the oxalic acid present may not be extracted and become effective as soluble oxalate? But since, according to Fownes, the normal sodium oxalate is only slightly soluble, and according to Bernthsen it is the *least soluble* of the alkaline salts, both acid and neutral, we may put aside this interpretation of things as unlikely.

In the cases of alleged poisoning by rhubarb leaves already alluded to, the poisonous action has been attributed to the oxalic acid present. But the term poison has no significance apart from dose; reduce this sufficiently and, even in the case of the most virulent poisons, toxicity vanishes completely. What is the evidence from this quantitative point of view?

In a recent case of supposed death from rhubarb leaves[4] it was stated at the inquest that the leaves contained approximately equal parts of potassium binoxalate and of calcium oxalate, of each 10 grains in the pound of leaves—i.e., 10 grains of soluble or active oxalate, and 10 grains of insoluble or inactive oxalate; the latter may be dismissed as playing no part, for we remember that the antidote to oxalic acid poisoning is a lime salt. If, therefore, a whole pound of the leaves had been eaten, the effective poisonous dose in this instance will have been 10 grains, and if we regard a third of a pound as a fairly liberal helping, the lethal dose will have been reduced to one-third—say 3½ grains. But the smallest quantity of free oxalic acid, probably the most active form of all the oxalates, which is said to have been the cause of death in a boy of 16, is 60 grains, and, on the other hand, recovery has taken place after the swallowing of an ounce and a quarter.[5]

The state of the stomach, full or empty, is always an important element when estimating toxic action, which may be due to local or to systemic action (after absorption) or to both, but in the case in question, in which the rhubarb formed part of a meal, it must be clear that 3½ grains diluted by the contents of a full stomach could not cause any local damage to the mucous membrane, and that this dose, the eighteenth part of the minimal fatal dose, became lethal after absorption!

It must, then, be admitted that the evidence incriminating the leaves in this particular case is scarcely convincing. In conclusion, it may be added that in the writer's household the use of rhubarb leaves as a vegetable has been in common practice during the last three or four years and still continues. An undoubted laxative action attends this use, but this should be reckoned as virtue rather than as vice if the use be regulated accordingly.

I am, Sir, yours faithfully,

HARRINGTON SAINSBURY.

Wimpole-street, W., July 2nd, 1917.

[1] Cf. Lindley's Treasury of Botany, art. Rheum.
[2] Dictionnaire de Matière Médicale, Mérat et de Lens, 1834, art. Rheum.
[3] Lindley, op. cit., art. Rumex.
[4] See THE LANCET, June 2nd p. 847.
[5] Cf. Toxicological Manuals of Dixon Mann and of Witthaus.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular asking for information for the Medical Directory, 1918, was posted to members of the profession on July 3rd. We are anxious that those forms should be returned to us as promptly as possible. If in any cases the circular has not been received a duplicate will be sent on application. It is especially desirable that those practitioners whose addresses are included in the London Postal District should return the new district numbers.

We are, Sir, yours faithfully,

THE EDITORS.

7, Great Marlborough-street, London, W., July 3rd, 1917.

URBAN VITAL STATISTICS.

(Week ended June 30th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·7, against 12·8 and 12·4 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 11·3, or 0·9 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·4 in Enfield, 4·5 in Eastbourne, and 4·7 in Edmonton to 20·3 in Exeter, 20·6 in Rotherham, and 21·0 in Carlisle. The principal epidemic diseases caused 278 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 148 from measles, 59 from infantile diarrhœa, 37 from whooping-cough, 22 from diphtheria, 7 from enteric fever, and 5 from scarlet fever. The deaths from measles showed a further decline compared with the numbers in the four preceding weeks, and caused the highest annual death-rates of 2·5 in West Hartlepool, 2·9 in South Shields, 4·5 in Middlesbrough, and 6·2 in West Bromwich. The 606 cases of scarlet fever and 1051 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 19 above and 16 below the numbers remaining at the end of the preceding week. Of the 3796 deaths from all causes in the 96 towns, 131 resulted from violence. The causes of 29 of the total deaths were uncertified, of which 6 were registered in Birmingham and 3 in Manchester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was equal to 13·6, against rates steadily declining from 17·0 to 15·8 per 1000 in the six preceding weeks. The 296 deaths in Glasgow corresponded to an annual rate of 13·8 per 1000, and included 27 from whooping-cough, 24 from measles, 2 from diphtheria, and 1 from infantile diarrhœa. The 83 deaths in Edinburgh were equal to a rate of 13·0 per 1000, and included 5 from measles, 2 each from scarlet fever and whooping-cough, and 1 from diphtheria.

Irish Towns.—The 92 deaths in Dublin corresponded to an annual rate of 12·0, or 5·4 per 1000 less than that recorded in the previous week, and included 3 deaths from infantile diarrhœa and 2 from whooping-cough. The 94 deaths in Belfast were equal to a rate of 12·5 per 1000, and included 2 from enteric fever.

Mrs. Lumley-Dann writes to say that "Mascot Day" has been abandoned, but small replicas of Captain Besley's 5000-year-old, pre-Inca mascot can be secured post free by sending half-a-crown to "Mascot," 1, Marylebone-passage, Wells-street, Oxford-street, London, W. 1. The proceeds go to a group of private hospitals, under the War Office, in need of assistance.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. M. Greer, R.A.M.C., attached Royal Welsh Fusiliers, was educated at Liverpool University and qualified in 1907. He had held appointments at the Liverpool Stanley Hospital, at the Liverpool Dispensary, and at the Leeds Public Dispensary, and was in practice at Corris, Merionethshire, prior to joining the R.A.M.C.

Died.

Temp. Capt. F. C. H. Piggott, R.A.M.C., was educated at Cambridge and at St. Thomas's Hospital, London, and qualified in 1884. He was formerly assistant demonstrator to the professor of physiology at Cambridge and H.B.M. Acting Consul for East Soudan, and prior to joining the R.A.M.C. was in practice at Teignmouth, South Devon, where he was medical officer of health of the Union and Port Districts and held other appointments.

Wounded.

Capt. G. F. Fawn, R.A.M.C., attached Rifle Brigade.
Lieut. V. T. C. Bent, R.A.M.C., attached N. Staffs. Regt.
Lieut. J. S. Clark, R.A.M.C., attached Yorks Regt.
Lieut.-Col. R. H. L. Cordner, R.A.M.C.
Capt. J. L. Baskin, R.A.M.C., attached London Regt.
Capt. I. Campbell, R.A.M.C.
Capt. A. J. Smith, R.A.M.C., attached Middlesex Regt.
Capt. L. H. Skene, R.A.M.C., attached Royal Fusiliers.
Capt. A. E. Sutton, M.C., R.A.M.C.
Capt. C. N. Binney, R.A.M.C.
Capt. W. V. Corbett, R.A.M.C.
Capt. A. Juett, Australian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Major R. R. B. Wall, Royal Field Artillery, killed in action, sixth son of the late Surgeon-General T. F. Wall.
Capt. and Flight Commander J. W. W. Nason, Royal Sussex Regiment and Royal Flying Corps, killed in action, son of the late Dr. C. St. S. R. Nason, of Gloucester.
Second Lieut. C. R. Barrett, Royal Field Artillery, died of wounds, second son of Dr. W. P. Barrett, of Folkestone.
Private P. G. Watson, Royal Berks Regiment, killed in action, eldest son of Dr. S. G. Watson, of Southsea, formerly of Brighton.
Major C. R. M. Young, Royal Garrison Artillery, died of wounds, eldest son of Dr. M. Young, J.P., of West Hartlepool.
Lieut. L. S. Bowman, King's Own Royal Lancaster Regiment, and Royal Flying Corps, killed in action, only son of Dr. R. O. Bowman, of Ulverston, Lancs.

THE MESOPOTAMIA REPORT.[1]

The Mesopotamia Report, published at the end of last week, is issued at the accessible price of 2*s*., and has already received such wide notice in the daily press that all our readers may be assumed to be familiar with its general findings. Nothing in the Report has moved the public more than the revelation of the circumstances of the medical breakdown which occurred in the latter part of 1915, inflicting the most terrible suffering on the sick and wounded, whose numbers were so greatly increased by the extension through Kut-el-Amara to the vicinity of Bagdad of our lines of operation.

The following are the findings and conclusions of the Commission in respect of the treatment of the sick and wounded and the medical provision generally :—

The medical provision for the Mesopotamia campaign was from the beginning insufficient; by reason of the continuance of this insufficiency there was a lamentable breakdown in the care of the sick and wounded after the battle of Ctesiphon and after the battles in January, 1916; there was amelioration in March and April, 1916; but that since then the improvement has been continual until it is reasonable to hope that now the medical provision is satisfactory.

The defects of medical provision caused avoidable suffering to the sick and wounded, and during the breakdown in the winter of 1915–16 this suffering was most lamentably severe.

The deficiencies, which were the main causes of the avoidable suffering of the sick and wounded, were in the provision of the following: (*a*) river hospital steamers; (*b*) medical personnel; (*c*) river transport; (*d*) ambulance land transport. To these fifth and sixth main causes may be added in respect to the operations in January, 1916: (*e*) The absence of the medical and supply establishments of the 7th Division; (*f*) the premature efforts to relieve Kut in consequence of the erroneous estimate of supplies in that place.

As to personal responsibility the Vincent-Bingley Commission[2] found: "That a grave responsibility for that part of the suffering which resulted from avoidable circumstances rests with the senior medical officer of the force, Surgeon-General G. H. Hathaway, and with General Sir John Nixon, the general officer commanding the force, from April 9th, 1915, to January 19th, 1916. General Hathaway did not represent with sufficient promptitude and force the needs of the services for which he was responsible, and in particular failed to urge the necessity for adequate and suitable transport for the sick and wounded with that insistency which the situation demanded. General Nixon did not, in our opinion, appreciate the conditions which would necessarily arise if provision for the sick and wounded of his force were not made on a more liberal scale." We endorse the finding as regards Surgeon-General Hathaway who in our judgment showed himself unfit for the high administrative office which he held. We may add, however, as regards river and land transport, that while it was the duty of Surgeon-General Hathaway to urge its necessity, it was actually the duty of the Quartermaster-General's department and of Sir John Nixon's staff to see that it was provided. So far as Sir John Nixon is concerned, however, we think that he was throughout solicitous as to the condition of the wounded. The main mistake he made was to rely too absolutely on the statements made to him by his Deputy-Director of Medical Service, Surgeon-General Hathaway; to that extent he may be blamed, but he stands, so far as responsibility is concerned, in a very different position from that occupied by Surgeon-General Hathaway.

The officer directly responsible for the deficiencies of medical provision in Mesopotamia is, however, the Director of Medical Services, India. This appointment was held at the beginning of the war by Surgeon-General Sir William Babtie, who held the office between March, 1914, and June, 1915 but was away from India for six weeks in February and March, 1915. He was succeeded by Surgeon-General J. G. MacNeece on July 8th, 1915, and the latter proceeded home on sick leave on April 15th, 1916. Sir William Babtie in his evidence before us impressed us as an officer of ability and knowledge, but we do not think that he brought these qualities sufficiently to bear upon the task before him. He accepted obviously insufficient medical provision without protest and without any adequate effort to improve it. He cannot, therefore, be held blameless. Surgeon-General MacNeece did not give evidence before the Vincent-Bingley Commission, but he appeared before us. He was, in our opinion, an officer thoroughly desirous of fulfilling the duties assigned to him; but he was a man of advancing years and diminishing strength, unequal to the position he was called upon to fill, and his administration appears to us to show no signs of the vigour and efficiency that were required.

We find that (*a*) the Home Government agreed with the Indian Government in limiting the general military preparations of India before the war in the interests of retrenchment, and provision was accordingly not made for such an expedition as that to Mesopotamia. The limitation of medical preparation and the low standard of medical treatment in the Indian Army at the outbreak of war were the natural outcome of this policy, which was pursued for many years and was in force right up to the date of the war. (*b*) The private letters of the Secretary of State to the Viceroy showed an earnest and continuous anxiety as to the condition of the wounded, and the only comment that can be made upon the Secretary of State's procedure is that he did not fully utilise the official powers at his disposal for the purpose of forcing at an earlier period an investigation into the treatment of the wounded in Mesopotamia. (*c*) To Lord Hardinge of Penshurst, as Viceroy, belongs the general responsibility attaching to his position as the head of the Indian Government, to which had been entrusted the management of the expedition, including the provision of medical services. In regard to the actual medical administration he appears to us to have shown throughout the utmost goodwill, but considering the paramount authority of his office his action was not sufficiently strenuous and peremptory. (*d*) A more severe censure must be passed upon the Commander-in-Chief, for not only did he, as Commander-in-Chief of the Army in India, fail closely to superintend the adequacy of medical provision in Mesopotamia, but he declined for a considerable time, until ultimately forced by the superior authority of the Viceroy, to give credence to rumours which proved to be true, and failed to take the measures which a subsequent experience shows would have saved the wounded from avoidable suffering.

There has been misuse of official reticence as to medical defects and the sufferings of the sick and wounded.

While the protective and sanitary work of the Medical Administration has in certain directions and at some periods (notably under Colonel Hehir) been commendable, yet there has not been generally sufficient promptitude in taking the precautions dictated by modern science for the protection of the troops against disease.

Throughout the campaign (with insignificant exceptions) the executive and regimental medical officers and personnel have devoted themselves with unremitting kindness, zeal and industry to the care of the sick and wounded with such means as were at their disposal.

Commander Wedgwood's separate Report, wherein it differs from the Report of the Commission, adds nothing to our knowledge of the medical arrangements in Mesopotamia.

THE CALLING UP OF MEN CLASSIFIED AS BIII. OR CIII.

A circular from the Local Government Board suggests that some misapprehension has occurred with regard to an Army Council Instruction recently issued as to men in

[1] Report of the Commission appointed by Act of Parliament to Enquire into the Operations of War in Mesopotamia, together with a Separate Report by Commander J. Wedgwood, D.S.O., M.P., and Appendices. H.M. Stationery Office. 2*s*. net.

[2] This Commission, appointed by the Government of India, reported on the medical arrangements in Mesopotamia in June, 1916. The Report is published in full as an appendix to the Mesopotamia Report, in which its findings are substantially adopted.

medical categories B iii. or C iii. The instruction was issued to recruiting officers, and directed that, for the present, men in these medical categories are not to be called up or posted unless they are clerks or are following a trade useful to the Army. So far as tribunals are concerned, these bodies, says the circular, should deal with the cases of men in these medical categories in the ordinary course on their merits, in accordance with the directions already issued to them. In any case in which exemption is not justified and is therefore refused, the men will be available for the Army if they should be required, or may be used as substitutes.

THE CARE OF THE WOUNDED: THE TAG SYSTEM IN THE RUSSIAN ARMY.

It may be of interest to our readers to know something about the tag system used by the Russian Army. The following tag, which measures 4 × 7 in., is tied around the neck of every wounded soldier as he leaves the regimental dressing station:—

Front of Tag.

No. .....

Rank .....
Company No. .....
Battalion No. .....
Regiment No. .....
Surname .....
Christian name .....
Father's Christian name .....
What doing when wounded .....
Nature of wound .....
Wounded, contusion, bullet .....
Shrapnel, piece of shell .....
Bayonet, sword .....
Head, breast, stomach, joint .....
Arm, leg (upper or lower) .....
Broken bone, bone not broken .....
Diagnosis .....

Back of Tag.

Date .....

First dressing station .....
Time of arrival .....
Arrival with or without bandage .....
Help rendered .....

Division dressing station .....
Time of arrival .....
Arrived with or without bandage .....
Help rendered .....

Division hospital .....
Time of arrival .....
Arrived with or without bandage .....
Help rendered .....

Evacuation station .....
Time of arrival .....
Time of departure .....
Help rendered .....

Sanitary train No. .....
When received .....
Taken to .....
Time of arrival .....

Name of hospital receiving .....
Time of arrival .....
What disposition was made .....

Discharged, well, on leave .....
Returned to regiment .....
To sanitarium .....
Army Investigation Bureau .....

REPRESENTATIVES of the Swiss Red Cross have recently been visiting prisoners of war camps in India.

THE RED CROSS EMBLEM IN INDIA.—The Red Cross emblem has hitherto been flaunted loosely in India, and an Ordinance has been published restricting its use to certain named societies such as the St. John Ambulance Association and its allied bodies.

RED CROSS GIFTS.—The gift of £7,500, which Major W. Napier Keefer, of Toronto, recently sent to the King, has been disposed of in the following manner: £2,000 to the Star and Garter Home, £2,000 to the Nurse Cavell Homes, £1,000 to the Auxiliary Hospitals for Officers' Department of the Pinewood Sanatorium, £500 to the Prisoners of War Central Fund, £1,000 to the Military Orthopædic Hospital, Dublin, and £1,000 to the Ulster Volunteer Orthopædic Hospital, Belfast. The King has also handed an additional £2,000 to the Joint War Committee of the Red Cross and Order of St. John for the treatment of sailors and soldiers suffering from deafness.

NEW WAR HOSPITALS IN INDIA.—The Raja of Ratlam has arranged to equip and maintain a war hospital of 38 beds at Indore for British troops.—The Parsis of Karachi have given the Parsi Institute, the Jehangir Kothari Hall, the Katrak swimming bath, and the entire grounds and premises of the institute to the military authorities for a hospital.

UNITED STATES HOSPITAL UNITS ON THE BRITISH FRONT.—It is announced that nearly 2,000 officers and other ranks of the United States Army Medical Service are at work in the British War zone.

A TECHNICAL SCHOOL FOR DISABLED SOLDIERS IN BOMBAY.—A technical school for disabled soldiers has recently been opened in Bombay. The institution is designed to serve a twofold object: artificial limbs will be fitted and the men will be instructed in their use; they will further be taught suitable occupations, so that they may not be encumbrances upon their relatives. The first part of this work will be under the supervision of Major L. Hirsch, I.M.S., who has already been engaged in similar duties in the Bombay War Hospital, and the cost of this teaching will be borne by Government.

Obituary.

CHARLES THEODORE EWART, M.D. ABERD.,

MEDICAL SUPERINTENDENT, LONDON COUNTY ASYLUM, CLAYBURY.

WE have received the following appreciation of the late Dr. C. T. Ewart from the pen of one who worked with him at Claybury on the close and intimate terms of official superior.

Clinical psychiatry has lost a devoted as well as an able and interesting personality by the death of Dr. Ewart. It is unspeakably sad that he should have been called away from the work of his life just as he was happily enjoying the climax of his ambition, for which he had long waited and which when at last attained he maintained with honour and the utmost credit—viz., the post of medical superintendent of the London County Council's large asylum at Claybury, with nearly 3000 beds, to which he was temporarily appointed only last September.

All who knew Ewart respected his loyalty, the love that he had for the work of tending upon the insane, his anxiety for their comfort and welfare, as well as his great reserve of perseverance and patience. It is not too much to say that no man was ever more respected by the staff, nor more loved by his patients for the special qualities which make a successful medical officer of a large institution. Those who knew him never failed to realise his great tenderness in speech and action, for sympathy was in the nether springs of his nature. He never turned a deaf ear to the most trivial complaint, even when made by the most unreasonable of his patients, and he readily gave an interview to the most unamenable and the most perturbing spirit. He regarded his patients as his friends, and he gave much of his time unstintedly to "interviews with friends" in order to reassure anxious relatives that the patient was receiving the best curative and remedial treatment. His sincerity always carried confidence and conviction.

He delighted in that introspective mental analysis which characterises so many Scotsmen, and his great pleasure was in a contemplative philosophy which sustained some religious, reflective, or mystical trend. He had initiative, original powers, and an inventive, suggestive mind; but he possessed the defects of his qualities. His calm, contented disposition, his mysticism (usually associated with a keen intellect), and his optimism militated against his achieving early success. He was self-resourceful and self-reliant, sympathetic, possessed a deep feeling of altruism with a most hopeful temperament, and had an imposing and pleasing presence; all these, combined with his refined intellect and good manner, made him a most popular and charming character.

Dr. Ewart was never keen to attend meetings. He was lost in a self-assertive crowd, and he loved so much more the personal touch, for he was the quiet scholar and he felt into the soul of things. He contributed on occasions to magazines and journals of varying standards, writing in the *Nineteenth*

Century, the *Westminster*, *Empire*, *Quest*, *Chambers's Journal*, and others, and he excelled in magazine articles rather than in contributions to medical literature because he had a passion for extending his sympathies beyond his special sphere. This lure of something more than was apparent in things made him search for the deeper realities, but in spite of his philosophic tendency he was practical in action. He was one of the earliest to draw official attention to the value of special industrial colonies for those afflicted with epilepsy, and he may be correctly described as the originator of the scheme adopted later by the London County Council when the colony for the insane epileptic was founded at Epsom. He was the first to institute the training of nurses in the London asylums upon the basis of a syllabus adopted by the St. John Ambulance Association, as a recognition of which he was elected an honorary life member of the association. He took the greatest interest in physical drill for mental patients, many of whom in asylums need some encouragement to perform muscular movements, especially those of a general, orderly, and sustained kind; and he was a firm believer in the maxim *mens sana in corpore sano*. He was an ardent naturalist, and loved the country with all its pursuits; he was a "plus" golfer, and well known at some of the principal links, a keen cricketer and football player, a good opponent at tennis, and a useful hockey hand; but owing to a football accident, which brought on a strained knee, he was obliged of late years to moderate his athleticism.

Dr. Ewart was the son of a judge of the High Court in Jamaica, and married whilst at Claybury a daughter of the late Mr. Abraham Flint, of Chigwell; she with a daughter are left to mourn the loss of a devoted husband and father. Last Easter he suffered from an abscess of the vermiform appendix, which was successfully treated in a nursing home in London, and on Saturday, June 16th, he was further operated upon in his home at Claybury for appendicitis. The writer saw him the day before he died, when the wound, owing to complications, was reopened and the abdomen re-examined. He was then calm, composed, and self-reliant, his only thoughts being for others. He died from exhaustion and shock four days after the operation, having for a few months only reaped the fruits of a too long deferred promotion. His remains were laid to rest by his own wishes near to the scenes of his long labours and with every mark of love and respect. He will be tenderly recalled by several present medical superintendents who were his colleagues at Claybury, as well as by many matrons of the institution, as a sincere and generous friend. R. A.-J.

FRANCIS HENRY KNAGGS, M.R.C.S. ENG.,

OPHTHALMIC AND AURAL SURGEON, HUDDERSFIELD ROYAL INFIRMARY AND HUDDERSFIELD WAR HOSPITAL.

Mr. F. H. Knaggs, who died on June 24th from pneumonia after a brief illness at the age of 56 years, was the third son of the late Dr. Samuel Knaggs, who practised for many years in Huddersfield. He was educated at the Huddersfield College and at Rossall, taking his medical course at Guy's Hospital, where he held appointments in the eye and ear departments, being later clinical assistant at the (Moorfields) Royal London Ophthalmic Hospital. After a term of two years as house surgeon at the Gloucestershire General Infirmary and Eye Institution he commenced general practice in 1889 with his father and steadily gained in reputation as a specialist in eye and ear affections. For several years he assisted his brother, Mr. R. Lawford Knaggs, in the ophthalmic and aural department of the Leeds Public Dispensary, and in 1905 became honorary surgeon to the recently created ophthalmic and aural department at the Huddersfield Royal Infirmary, to which his father was for many years senior honorary surgeon. His death thus breaks a connexion with that institution which had existed since its first establishment. From the date of its opening in October, 1915, Mr. Knaggs had been a civilian medical officer at the Huddersfield War Hospital, and in January last received a commission as temporary captain in the Royal Army Medical Corps. He leaves a widow and one daughter and a wide circle of friends to mourn their loss. Mr. Knaggs was formerly honorary secretary of the Huddersfield Medical Society, where he read a number of practical papers on ophthalmic subjects, some of which were published in our columns.

Medical News.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

Mercy D. Barber, W. T. G. Boul, Hilda K. Brade, Frances G. Bullough, Kathleen L. Cass, Ruth E. Conway, Jacob Holker, Norman Kletz (distinction in Medicine and Surgery), E. N. P. Martland, A. B. Platt, Jacob Shlosberg, D. M. Sutherland (distinction in Medicine), and Harry Taylor.

Medicine.—C. F. J. Carruthers and Elizabeth C. Powell.

Surgery.—Elizabeth C. Powell.

Obstetrics.—C. F. J. Carruthers, J. C. T. Fiddes, and R. S. Paterson.

Forensic Medicine and Toxicology.—T. H. Almond, Sybil Bailey, Mary G. Cardwell, James Charnley, J. C. T. Fiddes, F. L. Heap, John Mills, Kathleen O'Donnell, M. C. Paterson, Harriet R. L. Reid, Norah H. Schuster, L. J. Schwartz, V. T. Smith, and Marie Wardman.

THIRD M.B. AND CH.B. EXAMINATION.

Pharmacology and Therapeutics and Hygiene.—Elizabeth C. Davies, Kathleen Doyle, Georgiana M. Duthie, Olive M. Gimson, F. G. Hamnett, Simon Kelly, J. N. Laing, J. G. Nolan, Olga G. M. Payne, Ellis Pigott, F. L. Pickett, Effie Ratner, William Reikan, Annie G. Thompson, Doris M. R. Tompkin, and Ruth A. Wilson (distinction in Hygiene).

Hygiene.—Mary E. Boulen (distinction), Percival Fildes, and Archibald Harris.

DIPLOMA IN DENTISTRY.

Final Examination.—T. F. Healey, James Kershaw, and C. H. Travis.

UNIVERSITY OF SHEFFIELD.—At examinations held recently the following candidates were successful:—

M.B., CH.B. DEGREES.

Final Examination.—Annie Clark, Ethel M. Mathews, and Winifred H. Wells (first-class honours and distinction in Medicine and Surgery).

Third Examination.—John V. Mainprize, Alice White, and Ethel White.

First Examination.—Mary P. Gell, Ronald D. S. Inman, Muriel R. Laycock, Elsa F. Paige, and Doris Pindar (distinction in Chemistry).

The Kaye Scholarship was awarded to Dorothy E. Mathews, and the Clinical Gold Medal to Winifred H. Wells.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on June 26th the following degrees were conferred:—

Doctor of Medicine.—William Hudson and Noel Florentine Rowstron.

Doctor of Medicine for Practitioners of 15 years' standing.—James Vere Arkle and Elgar Down.

Bachelor of Medicine and Bachelor of Surgery.—Percy Vernon Anderson, George Albert Clark, William Duncan, Ernest Craig Dunlop, Mortimer Jacob Hilton, Reginald Hunter, Charles Gordon Irwin, Harold Mason Leete, Phyllis Marriott, Freda Newman, Thomas Wilson Shaw, and Sadek Abdel Shehid.

The Diploma in Public Health was awarded to William Eric Roper Saunders.

At the Second Examination for the degree of Bachelor of Medicine the following candidates were successful:—

Anatomy and Physiology.—Tom Hugh Ronald Anderson, John Edmund Basham, Eric Cresswell Dagger, Kate Gray, B.A., Mary Louise Griffiths, Margaret Barbara Herbst, William Ewan Douglas Hodgson, Dorothy Holmes (second-class honours), Harold Holtby (second-class honours), Henry Norman Clarence Jaffé, Edith Catherine Morris Jones, Thomas Hobson Kirk, George McCoull, Maurice Myers, Thomas Swinhoe Severs, Joseph Silverston (second-class honours), Henry Rochester Smith, Alice Mary Stenhouse, James Stonehouse, Kathleen Mary Weldon Watts, Arthur Guy Weston, Edith Short Williamson, and Athelstan Woodman (first-class honours).

At the Third Examination for the degree of Bachelor of Medicine the following candidates were successful:—

Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Douglas George Patrick Bell (second-class honours), Dorothy Olga Sutherland Blair, Ernest Dewar Charles, William Devereux Forrest, Alexander Thomas Harrison, Patrick Hickey, Louis Lavine, Angus Hedley Whyte, and George Roebuck Woodhead.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates passed the First Dental Examination:—

Daniel van der Merwe du Toit and Daniel Andries Marchand.

The following passed in the subject of Chemistry and Physics:—

Robert Mitchell du Preez and Thomas Bird Gregor.

The following passed the Final Examination and were granted the diploma L.D.S. R.C.S. Edin.:—

William Brownlee Watson and William Kerr, Edinburgh; Cayetano Bethencourt, Las Palmas, Canary Islands; and Andrew Francis Briglmen, Edinburgh.

METROPOLITAN HOSPITAL SUNDAY FUND.—The following are among the chief amounts received at the Mansion House to the end of last week:—

	£		£
Anon	2,000	St. Augustine's with St. Faith, E.C.	34
Watts, Watts & Co....	315	St. Mary's, Shortlands	33
Lt.-Col. More Nisbett	200	St. John's, Blackheath	32
Brixton Independent Church	185	Streatham Cong. Church ...	32
Temple Church...	135	Thomas & Cook...	31
London and Brazilian Bank, Ltd.	105	St. George's, Southwark ...	31
United National Collieries ...	105	Mr. W. E. Norton	30
Eastern Produce and Estates Co.	105	All Saints', Blackheath	30
Mr. W. D. Graham Menzies	100	Cowley Parish Church	30
Messrs. Erlangers	100	Tooting Wesleyan Church ...	27
Lord Leverhulme	100	Haslemere Parish Church ...	27
Lever Bros., Ltd.	100	Cook, Son & Co.	26
Burmah Oil Co., Ltd.	100	Alexanders & Co., Ltd.... ...	26
Blyth, Green, Jourdain & Co., Ltd.	100	Stapley & Smith	26
Sloper Bros.	100	Ascension Ch., Blackheath...	26
Chappell & Co., Ltd.	100	Westminster Cathedral... ...	25
Lord Somerleyton	100	Chapel Royal, Savoy	25
St. Andrew's, Frognal	88	Mitcham Parish Church ...	25
St. Marylebone Presb.Church	80	James Morrison & Co., Ltd....	25
Roehampton Parish Church	71	Miss Gabriel	25
Brompton Oratory	68	Mr. Frank Chaplin	25
Lemsford Parish Church ...	54	Mr. Harold Russell...	25
Dulwich College Chapel ...	53	Chesterfield Tube Co.	25
W. Gardiner & Co., Ltd. ...	52	Mr. W. Forster Brown	25
Mr. Oscar S. Ashcroft	52	F. C. A.	25
Anon.	50	St. Saviour's, Pimlico	24
Anon.	50	Coldharbour Parish Church...	23
Mrs. Kenneth M. Clark... ...	50	Wealdstone Parish Church ...	22
Hoare, Miller & Co....	50	St. John's, Waltnamstow ...	22
Mr. G. P. Gooch	50	Messrs. Gladstone, Wyllie & Co....	21
Mr Russell D. Walker	50	Harefield Parish Church ...	21
Mr. Otto Beit	50	In Memoriam Crosby Lockwood	20
Miss M. E. Druce	50	Miss E. C. Druce	20
E. Grey & Co.	50	Walker, Sons & Co., Ltd. ...	20
H. J. S....	50	Miss Hurt	20
A. and F. Pears, Ltd.	50	Mr. W. E. Manners...	20
Mr. W. Morton Phillips ...	50	Mrs. Christie Miller	20
St. Matthew's, Bayswater ...	50	Mrs. Eyres...	20
St. Andrew's, Lambeth... ...	50	Avelino Aramays & Co.... ...	20
Downe Parish Church	43	Lord Leith of Fyvie...	20
Christ Church, Watford ...	42	St. Thomas's, Clapton	20
Chapel Royal, St. James's ...	40	Northwood Presb. Church ...	20
Hayes (Kent) Parish Church	40	Wilmington Parish Church...	20
Stamford Hill Cong. Church	39	Muswell Hill Wesleyan Ch....	20
Grange Street ,, ,,	37	Carmelite Ch., Kensington...	20
Paddington ,, ,,	36	A Camp "Somewhere in France"... ... ... gns.	2
Farm Street R.C. Church ...	35		

The total already available for distribution amounts to about £22,000.

THE MCQUITTY EXHIBITION.—The McQuitty Exhibition at the Royal Victoria Hospital, Belfast, for clinical work, has been awarded to Miss Georgina Thompson. The prize was founded as a memorial to the late Dr. W. B. McQuitty, a distinguished member of the medical staff.

THE TREATMENT OF CHOLERA IN CALCUTTA.—The official minutes of the Calcutta Corporation, recently received, record the arrangements made for the treatment of cases of cholera among the poor by medical inspectors of the Corporation, as follows:—

During the cholera epidemic of 1916 the health officer consulted Sir Leonard Rogers and reported that the modern treatment of cholera involves estimations of blood pressure, specific gravity of the blood, &c.; that the technique of intravenous saline injections under strict antiseptic precautions would be by no means easy, particularly in a hut; and that the risks from tetanus, air embolism, &c., in a dirty, dark hut would be too great to run. The matter was dropped for a time. Government has taken up the question of providing facilities for the treatment of cholera by the injection of hypertonic saline solution and is taking steps to arrange for instructions in this method of treatment being given to sub-assistant surgeons likely to be placed on cholera duty and to provide the necessary apparatus at the hospitals. Government believes that the number of medical men in Calcutta who are conversant with this system of treatment is at present small and that their charges are too heavy for the poorer classes to avail themselves of their services. Government has suggested that the Corporation should arrange on the outbreak of epidemics of cholera for the employment of a medical staff trained in this method, and having the necessary equipment for the treatment of the poor at their own homes. Government was informed of the apprehensions of the health officer; but it has consulted Sir Leonard Rogers, who approves of the proposal if properly trained men are employed, and has expressed readiness to give Corporation medical officers a practical training in his ward at the Medical College Hospital. In view of the advice given by Sir Leonard Rogers, Government has suggested that the experiment may be safely tried provided trained men are employed. The health officer has selected eight medical and vaccination inspectors, all possessing medical qualifications, though not L.M.S. or M.B., and the first batch is undergoing training, which will take about two or three weeks. The training has been arranged so as to cause as little dislocation of the ordinary work as possible. It is proposed to have at each of the district offices a set of the apparatus required for making the transfusion.

The Corporation received the report of their health officer with satisfaction.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on June 21st, with Sir Francis H. Champneys in the chair.—A letter was discussed from the general secretary of the Medical Defence Union asking the Board to consider certain communications of a more or less threatening nature received by several members of the Union from county medical officers of health as executive officers of the local supervising authorities in respect of professional attendance by recipients of the letters upon midwifery cases where uncertified women are engaged. The Board decided that the reply be that the Central Midwives Board has no jurisdiction over medical practitioners, uncertified women, or local supervising authorities. As regards the conduct of medical practitioners, the authority possessing jurisdiction is the General Medical Council. If reference is made to cases in which medical practitioners have been cited before it for "covering" uncertified women, it will be seen that a distinction is drawn by it between such women acting as monthly nurses and those acting as midwives. An uncertified woman who "habitually and for gain" attends women in childbirth otherwise than under the direction of a registered medical practitioner is liable, under the first section of the Act, to a fine not exceeding £10. Cases of genuine emergency are not included.—A letter was considered from the medical officer of the Lambeth Union Infirmary asking that his pupils may take one month's training out of the four required by Rule C. 1 (2) (*b*) in the gynæcological ward of the infirmary. The Board decided that the medical officer of the Lambeth Union Infirmary be informed that although the arrangements at that infirmary seem to the Board likely to prove of considerable value, the terms of the proviso of Rule C. 1 (2) apply to a candidate from a general hospital only and require a three months' course of nursing in a gynæcological ward in order to entitle the candidate to a reduction of one month in her midwifery training. The Board has consequently no power under this proviso nor under any other rule to grant the concession asked for.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben gold medal, which is awarded tri-annually, "for eminent services rendered to the public health," has this year been awarded to Surgeon-General Sir Alfred Keogh, G.C.B., Director-General, Army Medical Service, and the gold medal "for conspicuous services rendered to the cause of preventive medicine" to Dr. E. W. Hope, professor of public health in the University of Liverpool.

A Maternity Nursing Home at 13, Prince's-gate, London, S.W. 7, was opened by the Professional Classes War Relief Council early in 1915 for the benefit of the wives of professional men adversely affected by the war. Over 300 babies have been born therein. Applications for admission or for assistance in regard to maternity expenses at home should be made to the secretary. The work done has been most useful and is worthy of all support. Many medical men in various parts of the country have come across cases where the families of professional men have been terribly hit by the war, and in such circumstances this home has been a veritable blessing.

Major H. N. A. Taylor, R.A.M.C. (T.F.R.), has been called to the Bar by the Honourable Society of Gray's Inn.

THE SERVICES.

ARMY MEDICAL SERVICE.

Lieut.-Col. and Bt.-Col. E. M. Pilcher, D.S.O., to be temporary Colonel.

Col. C. R. Elliott and Col. (temp. Surg.-Gen.) M. William Russell, C.B., are retained on the Active List.

TERRITORIAL FORCE.

Lieut.-Col. A. R. Tweedie, Field Ambulance, to be temporary Colonel whilst holding the appointment of Assistant Director of Medical Services.

Capt. S. S. Greaves to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. A. Primrose, Canadian A.M.C., to be temporary Colonel while employed as Consulting Surgeon.

Temp. Major R. S. Pentecost, Canadian A.M.C., to be temporary Lieutenant-Colonel while commanding a Canadian Field Ambulance.

Temp. Major H. J. Stiles (Captain, R.A.M.C., T.F.) to be temporary Lieutenant-Colonel.

To be temporary Majors: Lieut.-Col. H. A. Moffat, D.S.O., South African M.C., F. S. Langmead, A. Goodall, M. B. Wright, and Capt. A. W. Nuthall, R.A.M.C., T.F., Temp. Capt. R. T. Herron, and Temp Capt. G. S. Strathy, Canadian A.M.C., Temp. Capt. F. R. Seymour.

To be temporary Captains: F. W. Milne, S. W. Allworthy, D. W. Woodruff, H. Robinson (late Captain R.A.M.C., T.F.), C. K. Wallace, and G. B. Fergusson.

To be temporary Captains whilst employed with the Huddersfield War Hospital: A. E. Hardy and R. H. Rigby.

W. E. Bracey, late temporary Captain, to be Honorary Lieutenant.

To be temporary Lieutenants: J. D. Lyle, G. C. Birt, R. Ward, R. C. Walker, W. Bannatyne, P. Moran, G. H. Culverwell, J. J. Tough, W. M. Menzies, G. Stewart, L. D. Cohen, A. J. Ballantyne, A. McEwan, J. A. Thom, G. F. Shepherd, E. M. Condy, D. T. Harris, L. C. Newton, T. C. Pocock, L. W. Keigin, D. T. Evans, A. B. R. Sworn, J. E. Kesson, D. B. Davidson, P. Stewart, W. Matheson, J. R. Hewetson, G. Y. Caldwell, A. B. Vine, H. A. Cecil, H. F. Overend, J. N. G. Nolan, A. F. Cowan, J. M. Wallace, H. W. Latham, J. J. W. Evans, C. J. S. Dismorr, P. H. Henson, J. Sullivan, H. Matthews, G. Deery, W. F. Erskine, O. May, G. A. Hoffmann, R. Alderson, W. P. Miles, J. Lambie, H. F. Ransome, H. O'H. O'Neill, C. W. P. Hillary, D. W. Roy, W. Taylor, H. G. F. Spurrell, J. Rusk, M. Shipsey, S. E. Atkinson, J. Avery, H. V. Mitchell, W. B. Wilson, R. Stansfeld, P. W. Hampton, R. Crawford, K. McK. Duncan, J. Ritchie, W. Anderson, W. Lilico, W. B. Wickham, J. Hunter, J. F. Bridge, J. Wylie, S. D. Craig, L. Hutchinson, S. S. Prior, E. O D. Graham, R. Duncan, H. O. West, E. W. Witney, S. H. White, C. S. Thomson, G. H. C. Lumsden, A. E. Knapp, Q. Madge, O. V. Payne, G. W. Curtis, W. W. Allison, E. Tate, J. D. Ferguson, A. J. May, A. B. Sykes, A. C. Renton, R. H. Thomson, J. M. Ahern, F. G. Ralphs, W. H. F. Eales, F. J. Willans, J. A. Wood, C. W. Forsyth, J. H. Iles, T. J. Lloyd, T. Clarke, H. R. Wright, F. W. Pollard, V. G. Best, T. Gillespie, W. E. Waymark, J. Williamson, S. Wood, G. W. Pope, J. K. Holland, J. P. Doyle, G. C. F. Roe, J. A. MacSweeny, A. R. Soady, R. E. G. Gray, J. M. Taylor, A. E. Leapingwell, H. T. P. Young, H. M. Roberts, J. P. Brennan, W. S. Sheppard, J. F. Peart, E. R. D. Maconochie, S. Brown, A. W. Brodribb, W. Weir, J. B. Aickin, J. A. Mearns, W. Mair, J. Steward, G. A. Pratt, A. H. B. Hartford, G. N. Kirkwood, R. Peart, W. W. Carlow, P. Talbot, J. C. Wootton, A. W. Ewing, W. Rotheram, A. Evans, A. C. Russell, J. Wilson, C. M. Ockwell, R. H. Hunter, J. Dunbar, T. R. Davey, T. P. Robertson, M. J. McCarthy, L. Welply, F. H. Fuller, N. E. Sampey, J. I. F. Knight, C. B. Ticehurst, F. W. MacKichan, R. Brown, D. MacGregor, J. Scott, F. H. Dodd, C. M. Ormsby, J. H. Jones, A. S. Mellor, C. L. Traylen, C. Murray, D. P. Lindsay, L. H. Werden, N. Gray, J. S. Wilson, C. L. Driscoll, H. E. Davison, A. H. Collins, E. E. Paget-Tomlinson, G. C. Anderson, G. Cooper, M. Briscoe, H. Graham, H. W. Horan, R. G. Smith, P. D. Hunter, S. A. Furlong, B. J. Cusack, E. A. Sanders, J. J. Delany, G. G. C. Adams, J. R. Munro, R. J. W. McKane, J. Ferguson, H. N. K. Kevin, D. D. Ritchie, R. J. Bentley, S. H. Sweet, H. Spurway, A. I. Shepherd-Walwyn, G. E. Thornton, W. S. Graham, I. L. MacInnes, J. K. Manson, J. Dalgliesh, J. L. Maynell, E. M. Niall, S. B. White, J. L. Reid, W. Tregea, W. B. Clarke, S. N. Galbraith, H. F. Fenton.

Officers relinquishing their commissions: Temp. Lieut.-Col. A. H. Carter (on account of ill-health); Temp Capts. C. T. Hilton, L. E. Williams, W. S. Newton, H. N. M. Puckle, H. C. Nelson, H. R. Smith, H. C. Martin, P. M. O'Sullivan, H. McKenzie, G. S. Cronk, L. A. Carr, W. L. Pedlow, F. W. Overholt, D. A. Macfarlane, J. V. Williams, C. F. W. Robinson, and E. Caudwell (on account of ill-health); Temp. Lieut. W. M. Thomas.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: K. Masson, J. A. Martin, N. M. Lewis.

TERRITORIAL FORCE.

Capts. (temp. Majors) F. W. K. Tough, L. C. V. Hardwicke, P. W. Thompson, and J. O'Sullivan relinquish their temporary rank on ceasing to command a Field Ambulance.

Capt. S. S. Greaves is seconded whilst holding the appointment of Deputy Assistant Director of Medical Services.

Capt (temp. Major) S. G. Webb relinquishes his temporary rank on alteration on posting.

Ian Ewart Macdonald to be Lieutenant.

Capt. (temp. Major) C. G. K. Sharp relinquishes his temporary rank on alteration in posting.

Major (temp. Lieut.-Col.) J. Bruce relinquishes his temporary rank on alteration in posting.

Lieut.-Col. A. R. Tweedie is seconded whilst holding an appointment as an Assistant Director of Medical Services.

Capt. (temp. Major) D. M. Spring relinquishes his temporary rank on alteration in posting.

Majors (temp. Lieut.-Cols.) H. Jones, H. A. Rudyard, A. W. Anderson, W. Bryce, J. H. Jones, J. Evans, C. W. Edwards, J. R. Benson, D. C. L. Orton, and Capts. (temp. Majors) J. Arthur, C. Cameron, G. H. Spencer, C. G. Murray relinquish their temporary rank on alteration in posting.

Capt. J. N. Robins is restored to the establishment on vacating the appointment of Deputy Assistant Director of Medical Services.

Capt. (acting Lieut.-Col.) J. W. Keay reverts to the temporary rank of Major on alteration in posting.

Capt. J. Blackwood to be acting Lieutenant Colonel whilst commanding a Field Ambulance.

Cyril Montague Smith to be Lieutenant.

Capt. (temp. Major) R. B. Carslaw is seconded for duty with a General Hospital, and to retain his temporary rank whilst so employed.

Capt. E. M. Jenkins to be temporary Major whilst in command of a Field Ambulance.

Capt. (acting Lieut.-Col.) R. A. Broderick relinquishes his acting rank on ceasing to command a Field Ambulance.

W. D. Dick to be Lieutenant.

Surgeon-Major J. E. Bates, from East Surrey Regiment, to be Major.

Officers seconded for duty with a General Hospital: Lieut.-Cols. T. Gowans, J. F. Dobson, G. P. Bush, C.M.G.; Majors H. B. Roderick, A. Cook, F. W. Burton-Fanning, R. A. Veale, D. J. Graham, F. D. Boyd, C.M.G., J. A. Andrews; Capts. W. B. Marshall, W. Tyson, H. A. Cookson, M. G. Foster, C. N. Chadborn, W. E. Alderson, T. S. P. Parkinson, J. D. Lickley, W. Seymour, A. Gough, W. Longley, F. J. Stansfield, M. J. Stewart, T. B. Mouat, J. H. Cobb, A. Young, H. C. Snell, W. R. Higgins, C. W. Sharpley, R. H. Fagge, R. Michell, A. A. S. Skirving, J. Eason, J. McC. Johnston, J. Gilchrist, J. Henderson, S. G. Webb, H. B. Whitehouse, A. R. Bearn, J. G. L. Mackay, A. L. Flemming, and W. B. Secretan.

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of Colonel D. St. J. D. Grant.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Military Service (Review of Exceptions) Act.

THE Select Committee of the House of Commons which has been appointed to inquire into the working of the Military Service (Review of Exceptions) Act, commenced taking evidence on Monday, July 2nd. Mr. SHORTT was in the chair. It is understood that the aim of the Committee is to be in a position to report to the House in the early days of August, and for that purpose the intention is to sit four days a week. A very considerable body of evidence on behalf of men who have come under the operation of the Act has been offered to the Committee.

Brigadier-General CAMPBELL GEDDES, Director of Recruiting, was the first witness on Monday, and he described the necessity which, in the opinion of the War Office, existed for introducing a review of the exceptions from military service. He went on to say that a special branch had been created at headquarters under Colonel GALLOWAY, the senior physician at Charing Cross Hospital, for carrying out the arrangements of the Medical Boards throughout the country. Colonel GALLOWAY had inspected these arrangements and had advised their members as to the standards of fitness which should be applied to the men who came up for medical examination. The result had been that a much more uniform standard had been attained and very few men were now called up for the Army who were unsuitable for the work which was allotted to them. He was prepared to anticipate a 1 per cent. of error, but included in it there would be cases of impersonation. The War Office, he mentioned, had several definite cases where after a man had been classified by a medical board it happened that a hopelessly unfit man would report in his stead on the issue of the calling up notice. There had been a good deal of "doping," and for that reason re-examination became necessary. As to certificates given to men by private medical practitioners, he said that they had been valuable guides to medical boards in many cases, but the difficulty sometimes had been the absence of means of knowing that the man to whom the private certificate related was the man before the board. The witness also pointed out that the Army was in need of men of the lower categories. There was no more chance of a man classified as C 3 seeing service in the trenches than if he remained in civilian employment.

Sir A. Keogh's Evidence.

On Tuesday, July 3rd, Sir ALFRED KEOGH, the Director-General of the Army Medical Service, was the witness. He made a statement showing the functions which were exercised by his department. He said that it was not until the time of the Derby campaign that it was possible to establish a fully organised system for the medical examination of recruits. At that time he had suggested that medical boards should be set up for the examinations. In order to secure that these boards should have Army experience to guide them, it had been considered that where possible a military medical officer should be appointed president. All the medical boards had to do was to report as to the physical condition of the men put before them, and there was ample room for difference of opinion as to what category the man should be placed in. Medicine was not an exact science. It was for this reason that boards were established in order that decisions of great importance should not be made on the opinion of one practitioner. He emphasised the special character of the work of passing men for the Army. It involved a knowledge of the daily life of the soldier. In peace time a man was recruited for a special branch, and it was necessary for the examining medical officer to know something about the daily life of the soldier in that branch. Although the physical standards for the service were the same, the amount of weight to be laid on any specific disability depended on the branch of the service for which the man was accepted. When the war broke out men were taken to local practitioners for medical examination. These practitioners could not possibly know the requirements of the service, and the consequence was that a large number of men were recruited who in peace time would not have been accepted. Errors arose from the want of knowledge of the Army, and many of the differences of opinion which had been found to exist were quite legitimate differences as between medical men. Very good medical men might well differ as to the category in which a man should be placed. Sir ALFRED KEOGH went on to say that the best recruiting medical officer could not possibly examine more than 40 recruits a day without doing injustice to himself and the service. He had appointed a body of medical inspectors to try to obtain common standards. The president of a medical board could not override the opinion of

three or four other members. He did not appoint the civilian medical boards. That was done by the various commands. He would furnish particulars which would show the number of men who had been in hospital with less than three months' service, but he could not give the number of men who had been previously rejected before being accepted by the Army.

Mr. COCHRANE: It is not possible for men to be classified by the president of the board alone?

Sir A. KEOGH: Most emphatically it would be quite contrary to the custom of the service. He did not think that there had been a general lowering of the standards. The medical department did not fix standards, but interpreted standards. The military authorities told that department what they required the men to do, and the medical men tried to translate that into physical terms. The responsibility for the medical boards was on the deputy directors of medical service in the commands. The recruiting officers were responsible for summoning men to undergo medical examinations.

Evidence of Colonel James Galloway.

Colonel JAMES GALLOWAY gave evidence on Wednesday, July 4th. He stated that before assuming his present duties as inspector of medical recruiting boards he had spent considerable time as consulting physician to the First and Second Armies in France. He was senior physician in Charing Cross Hospital. In his visits of inspection he had visited nearly all the medical recruiting boards in the country. Some 139 or 140 recruiting medical boards were now at work in England, Scotland, and Wales. These varied in efficiency within wide limits. They were of various types. Perhaps the best of these boards were those which centred round a retired R.A.M.C. officer. These established themselves at the depôts of the various regiments, and where there was an officer who had retired young, say with the rank of major, and had identified himself with the civilian population, the board which formed round him was generally very efficient. Other boards had arisen more rapidly. For instance, the D.D.M.S. of a command, knowing he had to establish a board, would chose some officer and send him to establish it on his own initiative. The best boards of this type were chosen in collaboration with the local medical profession, and he thought it advantageous to act in coöperation with the Local Medical War Committees in the formation of boards. There was still another sort of board which he had come across, particularly in the Eastern Command. The president and the examining officers seemed to be military men, but on inquiry he often found that the majority of them were Territorial medical officers or civilian medical men holding temporary commissions. Colonel GALLOWAY spoke of the extreme difficulty experienced in many instances in obtaining suitable accommodation for the boards, and also of the composition of the boards themselves. A president and four members was the most suitable size. A good president was very important. He required training and a great deal of tact and prudence and a certain capacity for organisation. It was thought desirable that on the whole the president should be an officer who knew from experience what the soldiers had to do in the field. In his own view it was the better plan to get as presidents of the boards men who had Army experience, but were not too far removed from the medical profession so far as years and experience were concerned, and were able to know the requirements of the forms and were able to keep a certain amount of discipline and order in the proceedings of the board. The members of the boards were preponderatingly civilian practitioners. They were often the local doctors. In certain commands, where the president was in contact with the Local Medical War Committee, a panel of local practitioners was arranged. It was most essential that the president should not be working in his own locality. Colonel GALLOWAY spoke of the difficulty in placing men in the different categories. The margin between one class and another was often very narrow and there was room for legitimate disagreement. What had struck him during his inspection had been not numerous mistakes but the organisations which had grown up in such a short time and the general competency of the work performed by the boards. He had heard of certificates being torn up, but he had never seen anything of the sort himself. The certificate of a family doctor might be much more helpful to a board than even the certificate of a specialist who had examined a man.

The Committee adjourned.

Mesopotamia Commission.

It has been arranged that a day will be devoted by the House of Commons next week to a discussion of the Mesopotamia Commission's report. In the meantime a good many questions have been asked about it, but Ministers have been inclined to request Members to await a debate. On Wednesday, July 4th, both the Chancellor of the Exchequer and the Secretary of State for India declined to assent to the publication of the evidence taken before the Commission.

Lord HARDINGE OF PENHURST who occupied the position of Viceroy during the events of Mesopotamia covered by the report, has made a long statement on his position in the House of Lords. He made some references to the medical arrangements, and stated that he and the Commander-in-Chief in view of the rumours which reached them decided on the appointment of the Vincent-Bingley Commission. He remarked that the heavy demands made on India for the provision of ambulances and hospitals and their personnel in England, France, Mesopotamia, Egypt, and East Africa soon exhausted an organisation which had never been intended or prepared for operations out of India, and he pointed out that his telegram of Oct. 21st, 1914, a date within three months of the outbreak of war, indicated that the supply of hospital assistants and permanent hospital staffs had already been exhausted, but that every effort was being made to improvise new personnel. By making a great effort many more ambulances, hospitals, and medical personnel were despatched from India to the various theatres of war during the course of 1915. He pointed out that even before the despatch of the Vincent-Bingley Mission he took every possible means to improve the medical situation. It might be difficult for people in England to realise the inherent difficulties in the personal supervision by the Viceroy over the medical arrangements in a theatre of war so far distant from him as Mesopotamia was from India.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 27TH.

Infant and Maternity Welfare in Ireland.

Answering Mr. BYRNE, Mr. DUKE (Chief Secretary for Ireland) said: The Government proposals in regard to maternity and child welfare were communicated to the county, borough, and urban district councils and made public in June last year, and to rural district councils last month.

THURSDAY, JUNE 28TH.

Prisoners of War.

Replying to questions relating to the negotiations by British and German delegates at The Hague in respect to questions connected with the treatment of prisoners of war, Mr. BONAR LAW (the Chancellor of the Exchequer) said: The British delegates are only empowered to discuss questions relating to prisoners of war. These include the resumption of the repatriation of combatant and civilian prisoners under existing agreements; the extension of the existing agreements for the repatriation of combatant and civilian prisoners; the transfer of combatant prisoners of war to other neutral countries in addition to Switzerland; the internment of civilian prisoners of war in neutral countries; the more expeditious and satisfactory delivery of parcels to prisoners; the punishment of prisoners; reprisals on prisoners; the delay in reporting and failure to report the capture of prisoners; and the removal of British merchant officers from combatant officers' camps. The British delegates are not debarred from discussing other questions relative to prisoners of war which may be raised by the German delegates, but, in any case, such conclusions as may be arrived at will be subject to ratification by His Majesty's Government.

The Traffic in Morphine.

Sir WILLIAM COLLINS asked the Home Secretary whether Regulation 40 B in the Order of Council, No. 501, of July 28th, 1916, which restricted the traffic in opium and cocaine to that required for medicinal purposes applied also to morphine, the principal alkaloid of opium; and, if not, whether, in view of the abuse to which that drug was liable, he would bring to the notice of the Privy Council the desirability of extending the Order so as to include morphine, its salts and preparations.—Sir G. CAVE replied: Regulation 40 B does not apply to morphine. The Regulation is an emergency provision made under the powers of the Defence of the Realm Act, and I am not at present aware of any special grounds arising out of the present emergency for exercising those powers in regard to morphine. The inclusion of opium in the Regulation was necessary in order to put a stop to the illicit export of opium in contravention of the Proclamation.

Sir WILLIAM COLLINS asked the Foreign Secretary whether any communications had taken place with the Japanese Government in reference to the imports of morphine of British manufacture entering Japan and passing thence into China; and whether, seeing that Japan, China, and Great Britain were signatories to the International Opium Convention of 1912, which included morphia, steps would be taken with a view to restrict the traffic in that drug to legitimate and medical purposes only as provided in the convention.—Mr. BALFOUR wrote in reply: His Majesty's Ambassador at Tokio has been consulted in this matter, but the Japanese Government has not yet been actually approached. The other departments concerned are at present considering what steps can properly be taken to restrict the traffic in morphine.

An Amendment of National Insurance Acts.

Mr. TYSON WILSON asked the representative of the National Insurance Commissioners whether he proposed to bring in a Bill to amend the National Insurance Acts on the lines recommended by the Ryan Committee.—Sir E. CORNWALL replied: The matter is now under consideration, and I hope it will be possible to introduce at an early date an amending Bill of a non-controversial nature.

Health of Munition Workers.

In the course of a comprehensive speech dealing with the activities of the Munitions Department Dr. ADDISON (Minister of Munitions) said: We have received much help from the branches of the Ministry which have special charge of the welfare and health of munition workers. The Health of Munition Workers Committee, under Sir George Newman, has helped us a great deal in this matter. I should hope that some of the reports which it has published and we have adopted will lead to a permanent improvement in our methods of industry. More than 600 firms have appointed supervisors whose sole duty is to promote the welfare of their workers, and great benefit has resulted in different directions. They deal with such questions as food, clothing, light, ventilation, rest, and so forth. I am sorry to say that last year the problems arising out of the handling of T.N.T. and other poisonous explosives became acute and I appointed a special committee, under the chairmanship of Dr. W. M. Fletcher, secretary of the Medical Research Committee, to investigate them and make recommendations. The efforts of this committee, in conjunction with the filling department, have resulted in the application of suggestions which have been accompanied by an enormous diminution of the cases of illness. We have found here, as we have found often enough before, that the problems of prevention, when understood, are easier than those of cure.

TUESDAY, JULY 3RD.

Funds for Treatment of Tuberculosis.

Sir G. GREENWOOD asked the representative of the National Insurance Commissioners whether he was aware that the funds in the hands of the Commissioners were hardly sufficient to enable them to meet the just claims upon them; whether it was anticipated that by reason of the war those claims would be very largely increased; and whether, in these circumstances, he would consider the desirability of applying the moneys provided by Parliament primarily for the purpose of defraying the expenses of sanatorium benefit, under Section 16 of the National Insurance Act, 1911, for such purpose in preference to expending them on painful experiments upon living animals.—Sir E. CORNWALL replied: I am aware that funds available for the treatment of tuberculosis in this country need to be increased and that by reason of the war this need has become more urgent, but I have no doubt that whatever provision is made for this purpose, Parliament would require that provision should also be made for continuing the essential work carried on by the Medical Research Committee in the interest of the health of the community.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

To be Certifying Surgeons under the Factory and Workshop Acts: BREW, R. V. (Chew Magna District of the county of Somerset); KHAMBATTA, J. C., M.B., Ch.B. Edin. (East Wemyss District of the county of Fife); WHITWORTH, W. C., M.R.C.S., L.R.C.P. Lond. (St. Agnes District of the county of Cornwall).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERGAVENNY, MONMOUTH COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary £7 7*s.* per week, with board, &c.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—House Surgeon. Salary £250 per annum, with board, &c.

BIRKENHEAD BOROUGH HOSPITAL.—House Surgeon. Salary £250 per annum and war bonus, board, &c.

BOURNEMOUTH, ROYAL NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—Resident Medical Officer and Clinical Tuberculosis Officer. Salary for joint appointments £430, with board, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL, Boscombe Branch.—Resident Medical Officer. Salary £300 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURTON-ON-TRENT INFIRMARY.—Resident House Surgeon. Salary £250 per annum, with board, &c.

CHILDREN'S INFIRMARY, Cleveland-street, London, W.—Assistant Medical Officer. Salary £250 per annum, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.

DIDWORTHY, S. BRENT, DEVON AND CORNWALL SANATORIUM FOR CONSUMPTIVES.—Locum Tenens for four weeks. 6 guineas per week, hospitality, &c.

DURHAM COUNTY COUNCIL.—Female Assistant School Medical Officer. Salary £300 per annum, &c.

GRANGE-OVER-SANDS, WESTMORLAND SANATORIUM AND HOME.—Locum Tenens Assistant Medical Officer for three weeks. Salary 7 guineas per week, with board, &c.

GREENWICH UNION INFIRMARY AND WORKHOUSE.—Assistant Medical Officer, unmarried. Salary £200 per annum, with apartments, rations, &c.

INSURANCE COMMITTEE FOR THE COUNTY OF LONDON.—Medical Adviser.

ITALIAN HOSPITAL, Queen-square, London, W.C.—House Surgeon for six months. Salary £150 per annum, with board, &c.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Female House Surgeon.

LIVERPOOL ROYAL INFIRMARY.—Male and Female Clinical Assistant for Treatment of Venereal Diseases. Male Assistant two hours three days a week. Female Assistant one day a week. Salaries £250 for Male and £100 for Female Officer.

MACCLESFIELD GENERAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Two Female Resident Medical Officers, unmarried. Salary at rate of £200 per annum.

MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7*s.* per week, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House Surgeon.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary £100 per annum, with board, &c.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physicians. Salary £50 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female House Physician and House Surgeon for six months. Salary at rate of £100 per annum each, with board, &c.

STAFFORDSHIRE, WOLVERHAMPTON, AND DUDLEY JOINT COMMITTEE FOR TUBERCULOSIS.—Holiday Locum Tenens. Salary 8 guineas per week.

STOKE-ON-TRENT COUNTY BOROUGH.—Female Assistant Medical Officer, in connexion with Maternity and Child Welfare Work, &c. Salary £350 per annum.

SUNDERLAND COUNTY BOROUGH.—Temporary Tuberculosis Medical Officer. Salary at rate of £500 per annum.

THROAT HOSPITAL, Golden-square, W.—Two Resident House Surgeons. Salaries £100 per annum, with board, &c.

WALSALL EDUCATION COMMITTEE.—Temporary School Medical Inspector. Salary at rate of £400 per annum.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, E.—Resident Assistant Medical Officer. Salary £300 per annum, &c.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

YORK, CITY OF.—Temporary Tuberculosis Officer. Salary at rate of £500 per annum.

Births, Marriages, and Deaths.

BIRTHS.

JONES.—On July 2nd, at Coleford House, near Bath, the wife of Captain Philip T. Jones, R.A.M.C., T.F.R., of a daughter.

MARRIAGES.

ALEXANDER-MORGAN.—On June 27th, at Stockton Heath Parish Church, Cheshire, by the Rev. H. V. Pigot and Rev. J. Collins, Richard Charles Alexander, M.B., F.R.C.S.E., temporary Captain, R.A.M.C., to Marjorie Linda Morgan, third daughter of W. Arthur Morgan, of Cork-street, London, W., and Cardiff.

DICKENSON—GOSTLING.—At St. Olave's Church, Staff-Surgeon G. O. M. Dickenson, M.B., R.N., to Mary Ella, elder daughter of Dr. J. H. and Mrs. Gostling, Bootham, York.

RICHES—RIDER.—On June 25th, at St. Mary's Church, Felpham, Major R. G. Riches, R.A.M.C., to Nellie Grace, daughter of William C. Rider and Mrs. Rider, of Felpham, Sussex.

DEATHS.

BIRDWOOD.—On June 28th, at Windsor-road, Ealing, George Christopher Molesworth Birdwood, K.C.I.E., C.S.I., M.D., aged 86.

BROWNE.—On June 27th, at Kirby View, Caldy, Edgar Athelstane Browne, F.R.C.S. Edin., M.Ch. Liverpool, aged 75 years. Formerly of Rodney-street, Liverpool.

COTTON.—On June 28th, at his residence, Highland House, Camden-road, N., Thomas Cotton, M.D., M.R.C.S., L.R.C.P., aged 80. No flowers, by request.

PIGGOTT.—On June 26th, suddenly, at Sutton Veny, Frederick Cecil Holman Piggott, M.D. Cantab., temporary Captain, R.A.M.C., of Teign Royd, Teignmouth, aged 57.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

EGYPTIAN REMEDIES FOR BITES AND STINGS.

AN important relic from ancient Egypt throwing light upon the medical knowledge of primitive times is the inscribed slab known as the Metternich Stele. It gives magic formulæ protective against bites of venomous animals, and, in case the injury had been suffered, remedial incantations and medical means of cure or alleviation. In Egypt medicine and magic were closely connected, being studied jointly in a college and clinic called "The Double House of Life." Of its curriculum we have some particulars in an inscription now in Rome. The medical measures for use in the case of bite or sting were as follows:—

> The person bitten, if unconscious, was examined, and if the wound's site was uncertain the body was smelt over. It would seem that the scent of the breath was indicative of the type of reptile inflicting the injury. Once the puncture was located the surgeon sucked the wound, spitting away any matter withdrawn. This process is frequently advised, and as blood is alluded to in all of them it evidently was the practice to make an incision near the puncture to abstract venom commencing to invade the arteries. If the sting was upon a compressible member, that was tightly compressed by the fingers and massage applied with the view of squeezing out the poison. Ligatures were employed to stop the circulation and retard infection. These were of a special kind, of which the physician had a supply, it being important they should be inscribed with magic formulæ. Bandages had such texts upon them, or upon labels attached. One remedy mentioned is a mixture of flour and salt. If the contagion had produced coma, the patient was violently shaken, and various means tried to awaken him. These included mesmeric passes and incantations, which were reported to have been successful when Isis cured Horus from the bite of the animal evil deity, Set.

It will be seen that the medical measures used did not amount to much. No antidote of any efficiency is advised. Therefore the interest of this inscription lies in its evidence of the meagreness of medical knowledge at the time when it was originally written. This may be very far back indeed, for it professes to be a copy of a very ancient and almost perished text found in a temple.

The intimate connexions between Egyptian magic and medicine are demonstrated by the dual title of physician and magician being assigned to the same person. The ancient hieroglyphs, or pictographs, for physician are very significant, being a seated man apparently with shaven head as became a member of some religious association; a pot or vase; and a barbed arrow; also a small vertical line. The jar evidently denoted the receptacle for drugs or salves, whilst the dart signified the poignant pain the medicine-man relieved, or a wound to be healed.

THE CHILDREN'S COUNTRY HOLIDAY FUND AND EAST-END AIR-RAIDS.

WHILE the immediate effects of air-raids are obvious the remote effects on the mind and body of the child must not be lost sight of. The suggestion that as many children as possible from North Street school area, Poplar, the school which suffered most severely in the East-End raids, should be sent away to the peace and quiet of the country has much to commend it. The Children's Country Holiday Fund is appealing for donations to this end and at the same time asking residents in the western counties within 150 miles of London, who may be in a position to secure suitable cottage accommodation, to communicate with the secretary at 18, Buckingham-street, Strand, W.C. 2.

A HIGH-FREQUENCY GENERATOR.

THE Sterling Corporation, Ltd., of 72, Wigmore-street, have shown us a form of high-frequency generator that has some obvious advantages. Though weighing only 5 lb., it is quite capable of giving all forms of high frequency in applications for local conditions, as distinguished from diathermy. As these local applications constitute the chief value of the high-frequency apparatus, weighing ordinarily almost as many hundredweights as this apparatus weighs in pounds, it will be seen that we have here a great technical advance on the apparatus hitherto available. Furthermore, the apparatus can be used in the patient's house with any current and any voltage as usually supplied. Where no main current is available a special form is supplied to work from batteries. A very complete series of vacuum and other electrodes are obtainable, and these, as well as the apparatus itself, are sold at a reasonable price. The vendors make some claim for the apparatus that it is a violet and ultra-violet ray generator and possesses special advantages on this account. We venture to doubt if these claims can be substantiated in practice, and they are unnecessary, seeing that without them the apparatus is well worthy of the attention of those interested in ordinary applications of high-frequency electricity.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37, Russell-square, W.C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture XIII.:—Prof. D. N. Paton: Feeding a Nation. Followed by a discussion.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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Entire Page, £5 5s.

Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 4th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 28	...	112	57	59	61	65	Overcast
,, 29	1·90	80	59	56	58	68	Raining
,, 30	0·04	90	60	51	52	56	Cloudy
July 1	...	113	69	52	57	59	Cloudy
,, 2	...	114	74	50	54	55	Overcast
,, 3	...	120	78	54	60	67	Fine
,, 4	...	70	63	57	56	60	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

A.—Mr. E. A. Armstrong, Lond.; Anglo-French Drug Co., Lond.; Messrs. Armour and Co., Lond.; Dr. J. Aikman, Guernsey; Mr. E. Arnold, Lond.; Messrs. Allen and Hanburys, Lond.; Temp. Surg. G. L. Attwater, R.N.; Anglo-American Pharmaceutical Co., Lond.; Sir R. Armstrong-Jones, Lond.; Dr. W. H. B. Aikins, Toronto.

B.—Mr. E. Baker, Birmingham; Dr. P. W. Bedford, Lancaster; Birkenhead and Wirral Children's Hospital, Medical Supt. of; Beckett Hospital and Dispensary, Barnsley, Hon. Sec. of; Borough Hospital, Birkenhead, Matron of; Borough of Royal Leamington Spa, Clerk to the; Prof. P. W. Bassett-Smith, C.B., Lond.; Col. H. A. Bruce, A.M.S.; Messrs. Butterworth and Co., Lond.; Capt. A. G. Bryce, R.A.M.C.; Messrs. Beghè and Chiapetta, Milan; Mr. G. Barker, Lond.; British Medical Association, Lond., Librarian of; Mr. A. E. Best, Lond.; Dr. J. Bourguet, Paris; Mr. J. Burns, Edinburgh; Dr. A. G. Bagshawe, Lond.; Bristol Medical Society, Librarian of; Bolton Union, Clerk to the; Messrs. Bale, Sons, and Danielsson, Lond.; Burma Civil Hospitals, Rangoon, Inspector-General of; Surg. C. D. Baines, R.N.; Boot's Pure Drug Co., Nottingham; Sir John Broadbent, Bart., Lond.; British Commercial Gas Association, Editor of.

C.—Dr. V. Chaterlain, Goodmayes; Messrs. Cassell and Co., Lond.; Dr. T. G. Crump, Yelverton; Capt. R. Craven, R.A.M.C.; Continental Publishing Co., Toronto; Dr. A. K. Chalmers, Glasgow; Mr. J. Cabburn, Lond.; Dr. L. Colebrook, Swanage; Children's Country Holidays Fund, Lond.; Messrs. E. Cook and Co., Lond.; Mr. H. A. Collins, Croydon; County Asylum, Prestwich, Medical, Supt. of; Mrs. A. Clark, Lond.; Major W. A. Chapple, M.D.; Dr. P. J. Cammidge, Lond.; Mrs. G. P. Cory, Cardiff.

D.—Messrs. Down Bros., Lond.; Capt. N. A. Dore, R.A.M.C.(T.); Durham County Education Committee, Durham, Clerk to the; Dr. D. L. Davies, Cardiff; Messrs. W. Dawson and Sons, Lond.; Capt. J. A. Doctor, N.Z.M.C.; Derbyshire Royal Infirmary, Derby, Sec. of; Darenth Industrial Colony, Dartford, Steward of; Mr. J. Dunlop, Lond.; Darlington Hospital, Sec. of; Devon and Cornwall Sanatorium for Consumption, Didsworthy, Medical Supt. of; Dr. H. Davies, Lond.; Messrs. Davies and Co., Lond.

E.—Epsom College, Lond., Sec. of; Dr. C. C. Easterbrook, Dumfries; Messrs. Elliott, Son, and Boyton, Lond.; Mr. M. Erfan, Lond.; Dr. H. A. Ellis, Middlesbrough; Drs. Engman and Mook, St. Louis.

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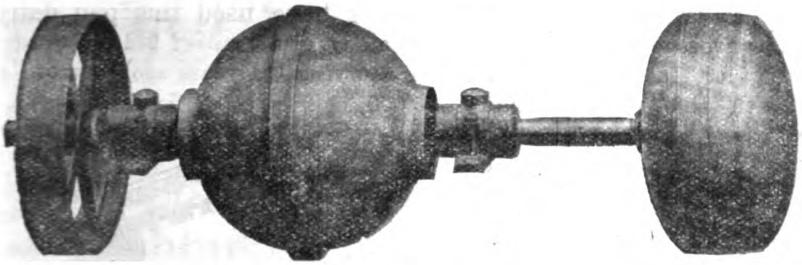
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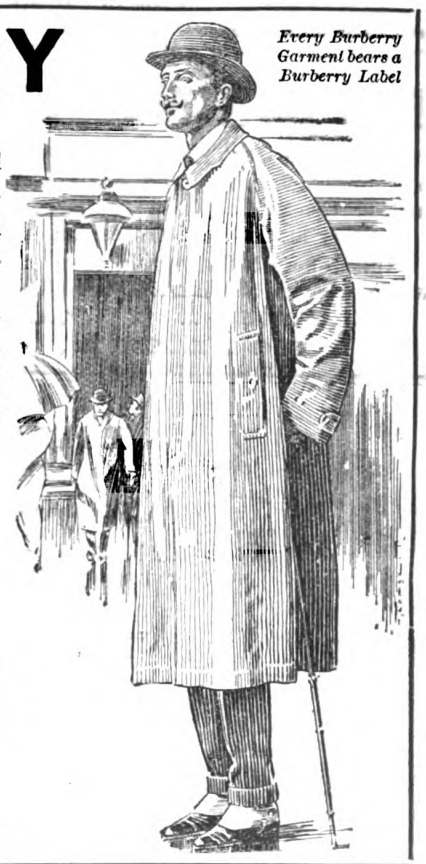
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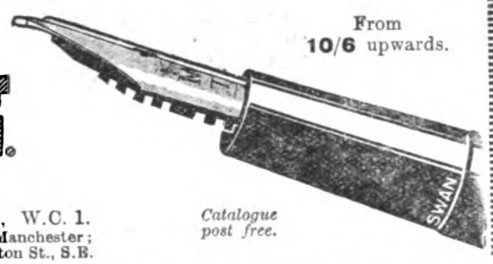
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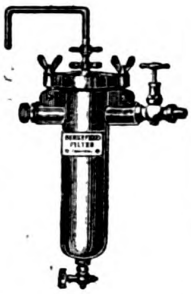
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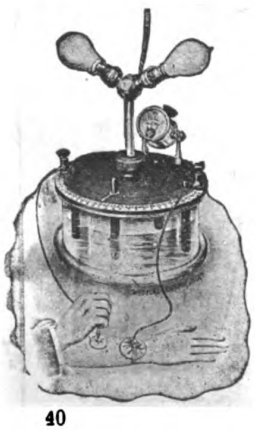
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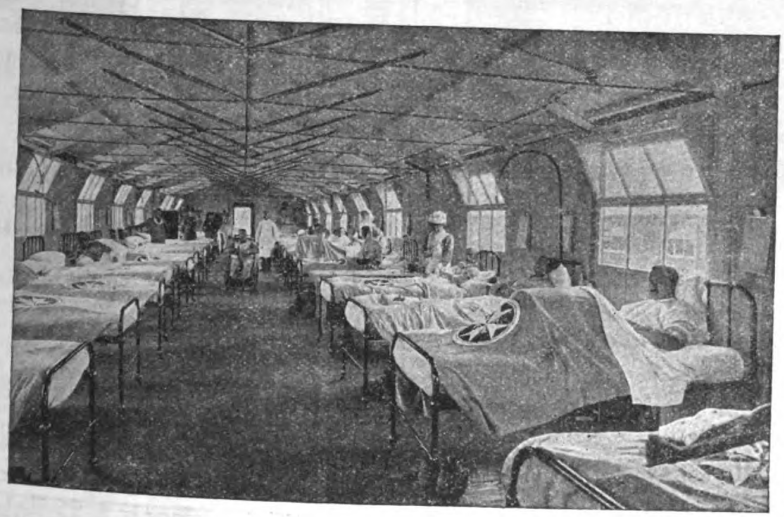
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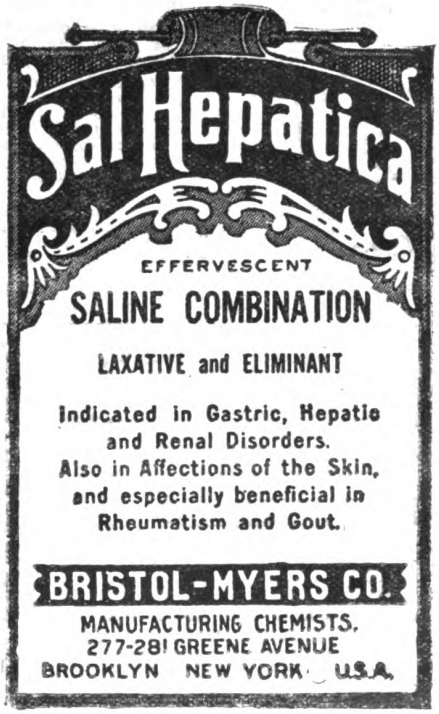
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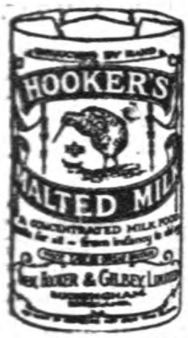
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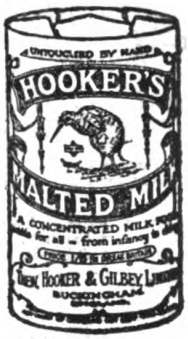
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*Young, Laura J.	3598
†Bramhall, Isabella J.	3451
‡White, Emily	2830
‡Massey, Martha A....	2405

* Pugh Pensioner. † Burney Yeo Pensioner.
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Meadowcroft, Margaret	2085

FOUNDATION SCHOLARSHIPS.

Pattullo, William L.	8774
Pincott, Oswald H.	8270
Snell, Arthur P.	6995
Clarke, Edward L.	5128
Muir, Kenneth A.	4897
Wells, John C. S.	4774
Haines, Richard W....	4732
Torney, A. Henry D. S.	4595

J. BERNARD LAMB, Secretary.

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For particulars apply to the Medical Superintendent, St. Andrew's Hospital, Northampton. TELEPHONE No. 56

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Other days by appointment.

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For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

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References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

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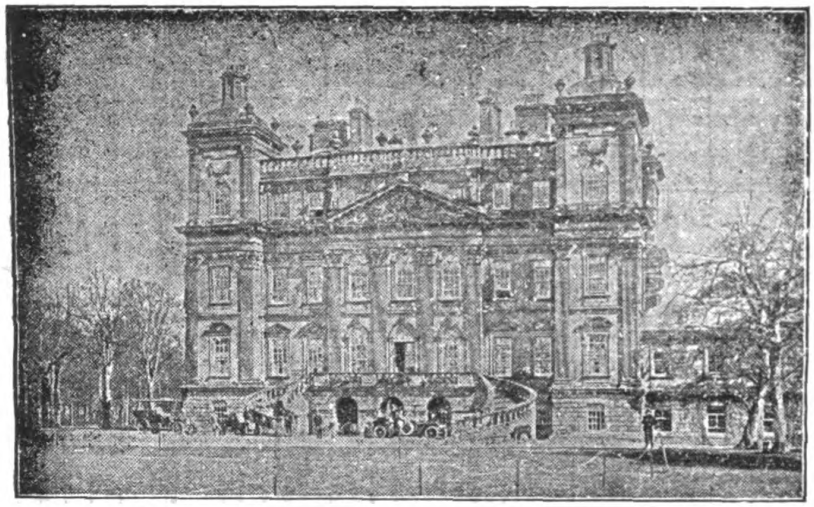
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By order.

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Candidates must be duly registered under the Medical Act. Salary £7 7s. per week, with board, apartments, and washing.

Apply, stating full particulars, to the Medical Superintendent.

Staffordshire, Wolverhampton and DUDLEY JOINT COMMITTEE for TUBERCULOSIS.—Holiday LOCUM TENENS wanted at once to assist in Tuberculosis Dispensary work. Salary 8 guineas per week and travelling expenses. Apply, Dr. GEO. REID, Eastgate House, Stafford.

The Throat Hospital, Golden Square, W. 1.—Two RESIDENT HOUSE SURGEONS are required to take up the duties at the end of August. Salaries £100 per annum, with board and laundry.

Applications, accompanied by copies of three testimonials, should be sent in not later than the 31st July.

W. HOLT, Secy.-Supt.

Beckett Hospital and Dispensary, Barnsley.—HOUSE SURGEON required early in September (110 beds). Salary £250; apartments, board, and laundry provided.

Applications (stating age and qualifications) and testimonials should be sent at once to the undersigned.

Barnsley, 2nd July, 1917. R. F. PAWSEY, Honorary Secretary.

Royal Victoria and West Hants HOSPITAL, Bournemouth, Boscombe Branch (including 246 beds for Military Patients.)—RESIDENT MEDICAL OFFICER required, to commence duty August or September. Salary £300, with board, lodging, and washing. Candidates (ineligible for Military Service) must be registered and hold a Medical and Surgical qualification.

Applications, with copies of testimonials, stating age and nationality, to be sent to

Ashley-road, Bournemouth. GORDON M. SAUL, Secretary.

Manchester Children's Hospital, Pendlebury, near Manchester (188 beds).

Wanted, Two RESIDENT MEDICAL OFFICERS (Ladies), who will be appointed for six or twelve months from 1st August.

Candidates must be unmarried, doubly qualified, and duly registered.

Salary at the rate of £200 per annum, including war bonus.

Applications, stating age, and accompanied by copies of testimonials, to be sent to the undersigned at the Hospital, Pendlebury, near Manchester, at once. By order.

June 18th, 1917. W. M. HUMPHRY, Secretary.

Wolverhampton & Midland Counties EYE INFIRMARY.—HOUSE SURGEON wanted on 29th August, accustomed to administer Anæsthetics and preferably with a knowledge of Refraction. Candidates must be ineligible for Military Service. There are 56 beds for In-patients (20 of which are reserved for Military Cases) and a large Out-patient Department.

Salary £150, with furnished apartments, board, and laundry.

Applications, with copies of three recent testimonials, should reach me not later than 14th July next.

ARTHUR M. MANBY, Secretary, pro tem.

The Eye Infirmary, Wolverhampton, 27th June, 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

West Ham Union. — Assistant MEDICAL OFFICER.—The Guardians invite applications for the appointment of a Resident Assistant Medical Officer for the period of the war, at their Infirmary, Whipps Cross road, Leytonstone, E. 11, at a salary of £300 per annum, with the usual residential allowances.

The Infirmary is situated on the borders of Epping Forest, the nearest station being Wood Street, Walthamstow.

Candidates must possess qualifications both in Medicine and Surgery, and preference will be given to candidates having previous hospital experience.

Intending applicants should communicate, in the first instance, with the Medical Superintendent, who will furnish full particulars as to duties, &c.

The successful candidate will be required, should occasion arise, to act in any other Institution under the control of the Board.

Forms of application will be forwarded on receipt of a stamped addressed fool-cap envelope, and must be returned not later than Tuesday, the 10th July, 1917.

L. E. FRAQUET, Acting Clerk to the Guardians.

Union Offices, Leytonstone, E. 11, July 2nd, 1917.

Macclesfield General Infirmary.—HOUSE SURGEON, Male or Female. Salary £200 per annum, with board, &c. D. S. BOWERS, Secretary.

Locum Tenens wanted for the Devon AND CORNWALL SANATORIUM FOR CONSUMPTIVES, Didworthy, S. Brent, for four weeks, August 1st to August 29th. 6 guineas per week, hospitality, and travelling expenses not to exceed £3. Apply, Medical Superintendent.

Royal Free Hospital, Gray's Inn-road, W.C.—HOUSE PHYSICIANS.—Applications are invited from duly qualified and registered Medical Men or Women for the above posts. Salary £50 per annum, with board, residence, and laundry.

Applications should be sent to the Secretary not later than July 16th, 1917.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. 2.—HOUSE PHYSICIAN required on 1st August. Six months' appointment. Salary £100 per annum, with board, residence, and washing.

Applications from duly qualified and registered candidates should be sent as soon as possible to T. GLENTON-KERR, Secretary.
28th June, 1917. Telephone: Dalston 305.

The Italian Hospital.—Applications are invited for the post of HOUSE SURGEON (either sex) from 1st September next. Candidates must be doubly qualified and registered.

The appointment will be for six months, renewable at the pleasure of the Committee of Management.

Salary £150 per annum, with board and residence.

Applications, with copies (only) of testimonials, should be forwarded to the Secretary, Italian Hospital, Queen-square, London, W.C., on or before Tuesday, the 31st July next.

Royal National Sanatorium for Con- SUMPTION and DISEASES of the CHEST, Bournemouth.—RESIDENT MEDICAL OFFICER and CLINICAL TUBERCULOSIS OFFICER.—The Committee invite applications for the position of Resident Medical Officer (Male).

The candidate selected will, subject to the approval of the Borough Council and the Local Government Board, hold the appointment of Clinical Tuberculosis Officer to the County Borough of Bournemouth, and in this capacity will be required to attend three times weekly at the Municipal Dispensary (adjoining the Sanatorium).

The salary in respect of the post of Resident Medical Officer will be £300, rising to £400, per annum, with board, residence, and washing. For the post of Clinical Tuberculosis Officer there will be an additional salary of £130 per annum.

Applications should be made on forms to be obtained from the Secretary, to whom they must be sent in, with copies of recent testimonials, not later than July 21st, 1917.

Canvassing will disqualify. A. G. A. MAJOR, Secretary.

Greenwich Union.—Greenwich Union INFIRMARY.—Election of ASSISTANT MEDICAL OFFICER.—The Guardians require the services of a fully qualified Medical Practitioner as Assistant Medical Officer of the Infirmary and Workhouse. The appointment is for one year.

Candidates must be single and not be eligible for service in H.M. Forces.

The Officer appointed will be expected to act generally under the direction of the Medical Superintendent.

Salary £200 per annum, with furnished apartments, rations, and washing, subject to the statutory deductions under the Poor Law Officers' Superannuation Act, 1896.

Applications to be made on forms obtainable from, or by personal application (by appointment) to, the Medical Superintendent, at the Infirmary, Vanbrugh Hill, East Greenwich, S.E. 10.

By order.
W. C. CORNISH, Clerk to the Guardians.
Guardians' Offices, Board-room, East Greenwich, S.E. 10.
July, 1917

County Borough of Sunderland.— TEMPORARY TUBERCULOSIS MEDICAL OFFICER.—In the absence of the Tuberculosis Officer on Military Service, applications are invited for the appointment of a Temporary Tuberculosis Medical Officer (Male or Female), at a salary at the rate of £500 per annum.

The person appointed must be a registered Medical Practitioner, and must devote whole time to the duties of the office, and if a male must be ineligible for Military Service.

Preference will be given to those who have had special practical experience in the treatment of Tuberculosis at a Sanatorium or otherwise. Experience in the use of Tuberculin, and of other special treatment, is important.

The officer appointed will have charge of the Tuberculosis Dispensary and the general arrangements for the provision of Tuberculosis treatment thereat, and at the Tuberculosis Pavilion at the Borough Sanatorium. He must be prepared to act as expert adviser of the Borough Insurance Committee in regard to the diagnosis and treatment of cases of Tuberculosis.

Canvassing, directly or indirectly, until after the first selection of candidates by the Committee will disqualify.

Applications, stating age, qualifications, and previous experience, accompanied by copies of not more than three recent testimonials (which will not be returned), to be forwarded to the undersigned not later than 10th July, 1917, endorsed "Tuberculosis Officer."

Note.—A sum of £50 per annum is at present being paid to the Officer in respect of treatment of County patients in addition to the salary mentioned. H. CRAVEN, Town Clerk.

Town Hall, Sunderland, 23rd June, 1917.

Queen Mary's Hospital for the East END (170 beds).—Wanted, HOUSE SURGEON, to commence duties in August. Applications should be addressed to the under signed. Male applicants must be ineligible for Military Service.

A. W. SCRIVENER, Secretary.

Westmorland Sanatorium and Home, Grange-over-Sands (135 beds).—LOCUM TENENS ASSISTANT MEDICAL OFFICER required for three weeks, commencing August 4th, 1917. Salary 7 guineas per week, with board, apartments, and laundry. Preference given to applicants with some Sanatorium experience. Duties include routine laboratory work. Apply to the Medical Superintendent.

Burton-on-Trent Infirmary.—House SURGEON.—The Committee require the services of a duly qualified Resident House Surgeon. 102 beds—half military, half civilian. Salary £250 per annum, with comfortable rooms, board, coal, and light. Duties to commence about the middle of July.

Applications, stating age and experience, and accompanied by copies of testimonials, should be sent at once to the Hon. Secretary, Mr. JOHN WOOD, The Infirmary, Burton-on-Trent.

The South London Hospital for WOMEN, South Side, Clapham Common, S.W. 4.—The Board of Management invite applications from fully qualified Medical Women for the posts of HOUSE PHYSICIAN and HOUSE SURGEON. Appointments for a period of six months' respectively to date from August 1st.

Salaries at the rate of £100 per annum respectively, with board, residence, and laundry.

Applications, with copies of testimonials, to reach the Secretary, at the Hospital, not later than the first post on July 9th.

Royal Albert Hospital, Devonport.— The post of HOUSE SURGEON will be vacant on June 30th. Applicants (Gentleman or Lady) must be duly registered, and unmarried.

Salary £150, with board and laundry. Extra remuneration at the rate of 21s. a week is allowed when working single-handed.

Further particulars as to the appointment will be furnished by the undersigned.

Applications should be addressed to the Chairman of the Selection Committee.

By order.
CHAS. W. DICKINSON, Capt. R.N., Hon. Sec.
Royal Albert Hospital, Devonport, 8th May, 1917.

County Borough of Stoke-on-Trent.— ASSISTANT LADY MEDICAL OFFICER.—Applications are invited for the position of Assistant Lady Medical Officer in connexion with the Maternity and Child Welfare Work, &c., in the Borough. Salary £350 per annum. Particulars as to the duties and the conditions of the appointment may be obtained on application to the Medical Officer of Health, St. Peter's Chambers, Glebe-street, Stoke-on-Trent. Applications, endorsed "Assistant Lady Medical Officer," and accompanied by copies of three recent testimonials, to be delivered to me not later than 12 noon on Tuesday, July 10th, 1917.

E. B. SHARPLEY, Town Clerk.
Town Hall, Stoke-on-Trent, June 28th, 1917.

Walsall Education Committee.— Appointment of Temporary SCHOOL MEDICAL INSPECTOR.—The Committee invite applications from qualified medical men (who must be ineligible for Military Service) and women for the post of Temporary School Medical Inspector.

The appointment will be for the duration of the war, or until the present Inspector (who will be called to the colours in the near future) returns from service with H.M. Forces.

The salary will be at the rate of £400 per annum. Forms of application, to be returned not later than Saturday 14th July, 1917, and a list of duties, &c., may be obtained of the undersigned.

W. SCARLETT, Acting Secretary.
Education Offices, Council House, Walsall, 3rd July, 1917.

Durham County Council. — The County Education Committee invite applications for the post of ASSISTANT SCHOOL MEDICAL OFFICER (woman), to act under the County Medical Officer, in connection with the inspection of children attending elementary schools, and such other duties as may from time to time be required by the Education Committee.

The salary will be £300 per annum, rising by annual increments of £25 to £350 per annum (in addition to a war bonus at the rate of £25 per annum), together with reasonable travelling and out-of-pocket expenses. The successful candidate will be required to devote her whole time to the duties of her office, and to reside in or near the district to which she may be attached, at a place to be approved by the County Education Committee.

In making the appointment preference will be given to the candidate who has

(1) Enjoyed special opportunities for the study of the diseases in children.
(2) Had some definite experience in school hygiene; and
(3) Had adequate training in State Medicine, or holds a diploma in Public Health.

The appointment will be subject to three calendar months' notice on either side, to expire on the last day of any calendar month. Applications, endorsed "School Medical Inspector," accompanied by copies of not more than three testimonials, must be sent not later than Wednesday, the 18th July, 1917, to the undersigned, from whom forms of application (to be completed in candidate's own handwriting) can be obtained.

Canvassing, directly or indirectly, is prohibited, and will disqualify.

A. J. DAWSON, Clerk to the Education Committee.
Shire Hall, Durham, 2nd July, 1917.

Liverpool Eye and Ear Infirmary, Myrtle-street, Liverpool.—Applications are invited for the post of LADY HOUSE SURGEON. Particulars as to duties, remuneration, &c., may be obtained from the Hon. Sec. of the Medical Board.

Monmouth County Asylum, Abergavenny. — Wanted, a Temporary ASSISTANT MEDICAL OFFICER (Female, or Male ineligible for Military Service) for the duration of the War. Salary £7 7s. per week, with board, apartments, and attendance. Apply to the Medical Superintendent, stating age, and enclosing not more than two recent testimonials.

Assistant Medical Officer (Male or Female) required at THE CHILDREN'S INFIRMARY, Clarendon Street, London, W. 1. (under the Metropolitan Asylums Board), 234 beds. Salary £250 per annum, with board, lodging, and washing.

Forms of application may be obtained by sending stamped addressed foolscap envelope to the Clerk to the Metropolitan Asylums Board, Embankment, London, E.C. 4, by whom applications must be received not later than 10 A.M. on Monday, 16th July, 1917.

City of York.—Temporary Tuberculosis Officer.—The York City Council invite applications for the post of temporary Tuberculosis Officer from persons experienced in the diagnosis and treatment of Tuberculosis. Applications from persons of either sex will be considered, but male applicants must be ineligible for Military Service. The candidate appointed must devote whole time to the work. Salary at the rate of £500 per annum, the appointment to be terminable at two calendar months' notice. Applications (stating when available) and accompanied by copies of three recent testimonials, should be delivered not later than the 10th July, 1917, to

PERCY J. SPALDING, Town Clerk, Guildhall, York.

National Hospital & University College HOSPITAL SCHOOL OF MASSAGE AND ELECTRICAL TREATMENT, Queen Square, W.C. 1. (In connexion with University College Hospital, Gower-street, W.C., and the National Hospital for the Paralysed and Epileptic, Queen-square, W.C. 1.)—Wanted, a Woman as HEAD OF THE SCHOOL, to commence her duties not later than September 1st. Salary £200 a year, with board and lodging. It is expected that the School Session will start early in October, and the curriculum includes the teaching of Massage, Remedial Exercises, and Medical Electricity.

Applications, stating age and qualifications, accompanied by not more than three recent testimonials, should be addressed, on or before July 14th, to the Secretary, National Hospital Queen Square, W.C. 1.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—ASSISTANT RESIDENT MEDICAL OFFICER, Male (ineligible for Military Service) or Female, required. Applicants must be registered. The appointment is for four months. The selected candidate will be expected to proceed to the appointment of Senior Resident Medical Officer (also for four months) at the end of the term of office on the recommendation of the Medical Staff. The salary of the Assistant Resident Medical Officer is at the rate of £80 per annum, and of the Senior Resident Medical Officer £80 per annum, with board, residence, and washing. Applications, with copies (not originals) of not more than three testimonials, will be received by the Secretary up to July 11th.

Canvassing is prohibited. Duties to commence on 1st August, 1917.

ARTHUR WATTS, Secretary.

County Borough of Sunderland.—EDUCATION COMMITTEE—Temporary SCHOOL MEDICAL OFFICERS.—Applications are invited from fully-qualified women or a man not eligible for Military Service for the post of Temporary School Medical Officer during the absence of the permanent Staff on Military Service. The person appointed will be required to devote his or her whole time to the service of the Education Committee, and will not be permitted to undertake any private practice or to hold any other appointment without the sanction of the Committee. Salary £450 per annum.

The appointment will be subject to three months' notice in writing given by either party.

Applications—to be made on forms which may be obtained from the undersigned—must be returned on or before 21st July next, accompanied by copies of not more than three testimonials. Canvassing, either directly or indirectly, until after the first selection of candidates by the Committee, will disqualify the applicant by whom or on whose behalf such canvassing shall have been made.

HERBERT REED, Secretary.

Education Department, 15, John-street, Sunderland, June, 1917.

Liverpool Royal Infirmary.—Treatment of VENEREAL DISEASES.—The Committee propose to appoint one Male and one Female CLINICAL ASSISTANT. Each must be legally qualified, and be prepared, if necessary, to attend In patients under the direction of the Honorary Surgeon of the Department.

The Male Assistant will be required to assist the Honorary Surgeon for two hours on three days a week in the Out-patient department—viz., Monday and Friday at noon, and Wednesday in the evening.

The Female Assistant will similarly be required to attend on one day a week—viz., Thursday at noon.

Salaries £250 for Male Officer, £100 for Female Officer. The Assistants will be allowed to engage in private practice.

The applications, which are subject to the approval of the Local Government Board, will be made for one year, and the holders will be eligible for reappointment.

Applications, stating age, qualifications, experience, and with testimonials, to be sent to the undersigned not later than Monday, 23rd July.

FRANCIS H. MOORE, Gen. Supt. & Secretary.

Insurance Committee for the County OF LONDON.—Applications are invited for the position of MEDICAL ADVISER to this Committee. Candidates should be of high professional standing, with special knowledge and experience of the diagnosis and treatment of Tuberculosis. Form of application and further particulars of the appointment, which is of a temporary and part-time character, may be obtained on application to the undersigned. Canvassing is a disqualification. Applications must be received at the Offices of the Committee not later than the first post on Friday, the 20th July, 1917. THOMAS BATEY, Clerk of the Committee.

Insurance-street, W.C. 1, June 29th, 1917.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

Locum Tenens Provided at ONE Hour's Notice.

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Locum Tenens wanted at once (ineligible for Military Service). Must have good references.—Apply (personally if possible), Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. (opposite St. Bartholomew's Hospital).

Locum Tenens, middle aged, well qualified, is open to work at once. — Address, Clarke, 157, Kennington Cross, London, S.E.

Wanted immediately, Assistancy or LOCUM with view to Partnership. Any part of England. Middle class and Panel. Excellent references and experience. Exempt (Silver Badge).—Dr. Brereton-Barry, Langara, Kingstown, Ireland.

Locum Tenens wanted immediately.— Mr. Percival Turner has numerous vacancies, in Town and Country, long and short Engagements, for reliable Locum Tenentes (ineligible for Military Service). Recent references required.—Apply (personally if possible), between 10 and 4, to 4, Adam-street, Adelphi, Strand, W.C. 2.

Good Locums can still be obtained from LEE & MARTIN, Ltd., 93, Hall-road, Handsworth, Birmingham. Telegraphic address: "Locum, Birmingham." Telephone N. 191

Lady Doctor desires work in or near London. Institution or otherwise. State particulars. Several years' hospital experience.—Address, No. 412, THE LANCET Office, 423, Strand, W.C. 2.

War Locum.—Young Man (ineligible) with first-class testimonials requires Locum in good class Practice in or near London. Disengaged shortly.—Address, stating full particulars, to No. 414, THE LANCET Office, 423, Strand, W.C. 2.

Medical Man (ineligible) seeks Part-time Work in or near London. Owns car. Good references.—Write M. 74, care of May's, 160, Piccadilly, W. 1.

Senior Medical Student requires post in Hospital. Certificate in Anæsthetics. Testimonials. Hospital experience.—Address, No. 413, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, Dispenser and Bookkeeper. One accustomed to do surgical dressings preferred. Hall Certificate.—Address, No. 410, THE LANCET Office, 423, Strand, W.C. 2.

Final-year Medical Student of Queen's University, Belfast, going up for M.B. next March, now desires post. Good certificates in all Final Year's subjects.—Address, No. 411, THE LANCET Office, 423, Strand, W.C. 2

X-Ray.—Lady requires X-ray work in Edinburgh from 2.30 p.m. daily. Radiography or therapeutics. Busy hospital preferred.—E. M. B., 26, Dalkeith-road, Edinburgh.

National Health Society, 53, Berners-street, W.—Wanted, Educated Women to train for posts of Profit and Imperial Usefulness. "Care of the Children."—Apply to the Secretary, from whom all particulars may be obtained.

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Thirty-six years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C. 2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

For Disposal, Practices or Partnerships.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. (opposite St. Bartholomew's Hospital).

Required, in or near Bournemouth, a General PRACTICE, with Panel, and producing not less than £750 per annum. Free to settle at once.—Send full particulars, in confidence, to Dr. P., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. (opposite St. Bartholomew's Hospital).

Wanted, Practices and Partnerships.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, are in urgent need of Practices and Partnerships for several of their Clients who are anxious to settle down at once.—Send full details, in confidence, Arnold & Sons, Transfer Dept., Surgical Instrument Manufacturers, 6, Giltspur-street, London E.C. (opposite St. Bartholomew's Hospital).

Wanted, a General Practice within easy reach of London, producing not less than £800 per annum. Must have good house and garden.—Send full details to Dr. H., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. (opposite St. Bartholomew's Hospital).

Wanted immediately, a Panel and Cash PRACTICE, producing not less than £750 per annum. Premium to be paid out of receipts. Can settle at once. Excellent references. Send full details in confidence. — Dr. M., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. (opposite St. Bartholomew's Hospital).

Wanted at once, Practice with Panel, about £800 to £1000, in S.W. or W. district.—Address, No. 415. THE LANCET Office, 423, Strand, W.C. 2.

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with thirty-six years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are Sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

A Medical Man of Indian nationality desires to dispose of his PRACTICE. Good panel and easily worked. Vendor willing to give a long introduction. An excellent opportunity for an Indian gentleman desirous of settling down in England.—Address, No 404. THE LANCET Office, 423, Strand, W.C. 2.

Isle of Wight.—Small Practice, about £380 per annum. Panel 350. Old-established. Practically unopposed. Boating, fishing, golf. Good house, garden, tennis, motor-house; £50 per annum. Premium £350.—Address, No. 408, THE LANCET Office, 423, Strand, W.C. 2.

For Sale.—North-East Coast, fashionable Watering Place, Middle and Working-class PRACTICE for Sale, owing to ill-health of owner. Returns for last three years average £611 per year. Panel of 800. Large house in own grounds, with garage. Rent £80 per year. No conveyance required. Small premium to prompt purchaser.—Address No. 409, THE LANCET Office, 423, Strand, W.C. 2.

Kent. — £500 a year. — Urgent. Unopposed, in good Residential district. Easily worked. Rail close. Very low premium for quick sale.—Apply, No. 6064, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Panel Practice, £800 a year, in London. Vendor joining R.A.M.C. No Midwifery. Can be worked as a lock-up. Ample scope for Private Practice.—Apply, No. 6154, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Easy Terms. — London Suburb. Good General PRACTICE in Western Suburb, returning £1000 a year. No panel taken. Easily worked. Fees 2s. 6d. to 7s. 6d. Good corner house and garden. Vendor joining R.A.M.C. Any reasonable terms accepted.—Apply, No. 6156, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Midland Town.—Over £800 a year. —Old-established good Middle-class PRACTICE in residential part of busy Town with hospitals, &c. Easily worked. Hardly any night work. Panel 900. Visits 3s. 6d. to 10s. Good corner house. Great scope. Vendor leaving through ill-health. Premium one year's purchase. Personally investigated and recommended.—Apply, No. 6136, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

East Anglia.—Very old unopposed PRACTICE in pleasant Agricultural district on line of rail, returning £650 a year. Very safe investment. Small house, rent £35, with garden. Panel about £300 a year. Good introduction. Price about one year's purchase; half down.—Apply, No. 6153, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Home County.—For disposal, good General Country PRACTICE, usually £1000 a year, but returning £1500 during war, in pleasant agricultural, residential, and yachting district. Within fifty miles. Vendor on active service. Premium only £800 for prompt sale. Good house and garden.—Apply, No. 6159, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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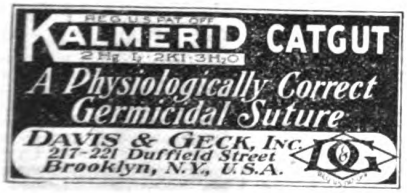
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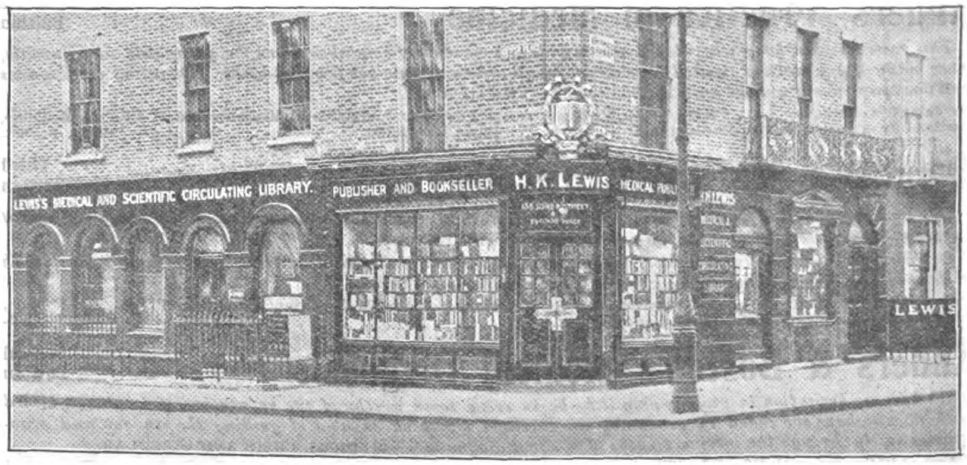
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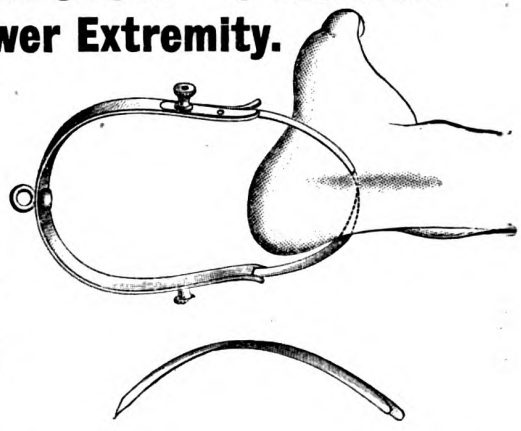
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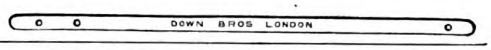
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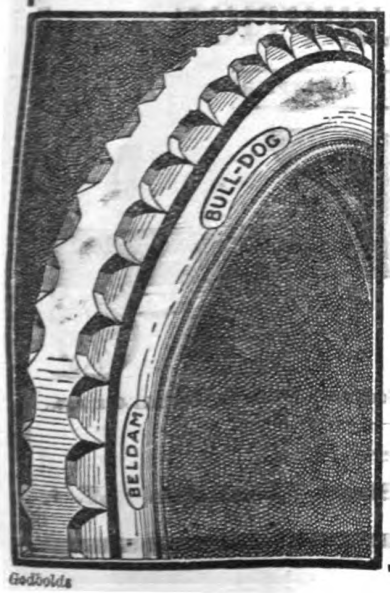
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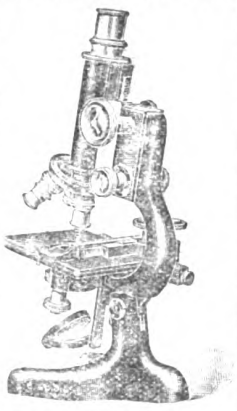
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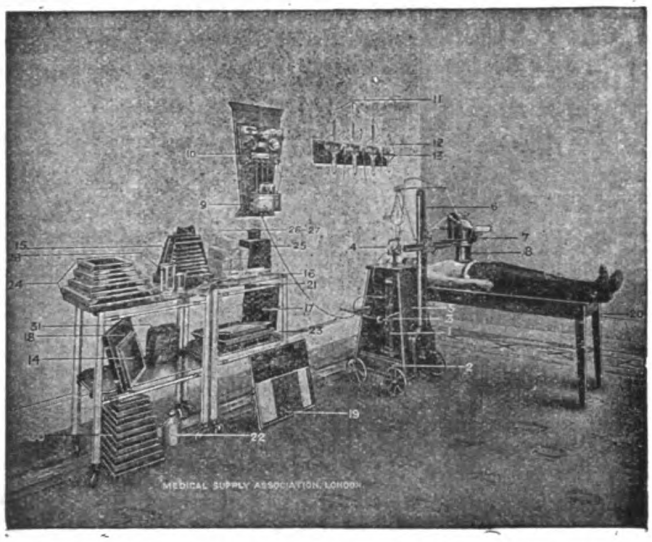
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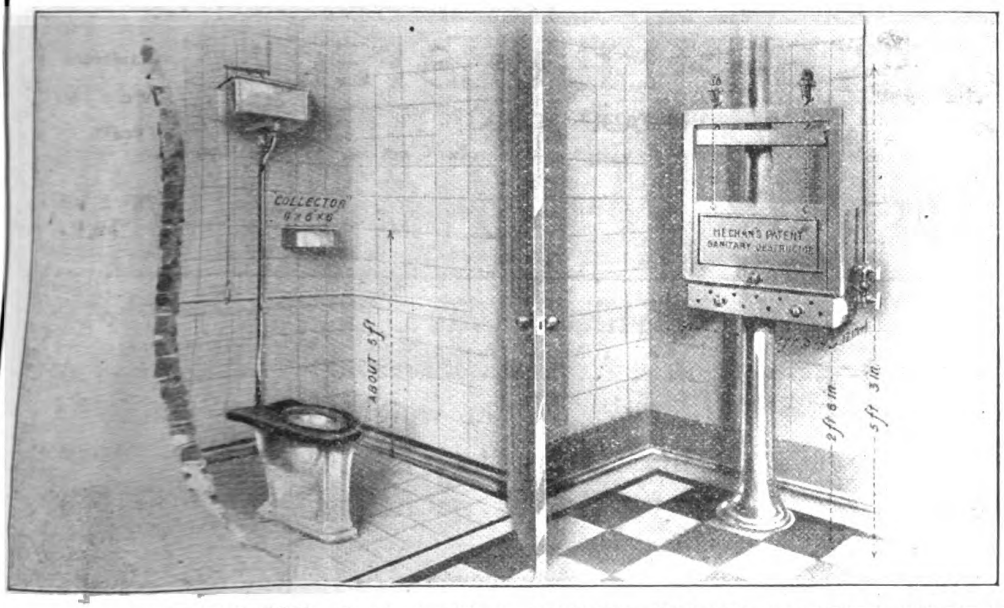
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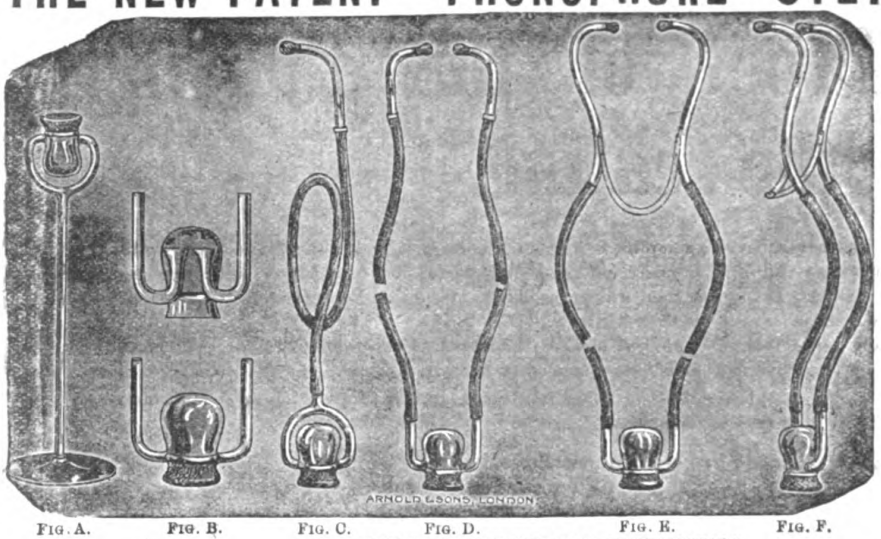


FIG. A. FIG. B. FIG. C. FIG. D. FIG. E. FIG. F.

The New Patent "Phonophore" Stethoscope (Fig. A.) 8/6
Ditto Chest piece (Fig. B.) 7/6
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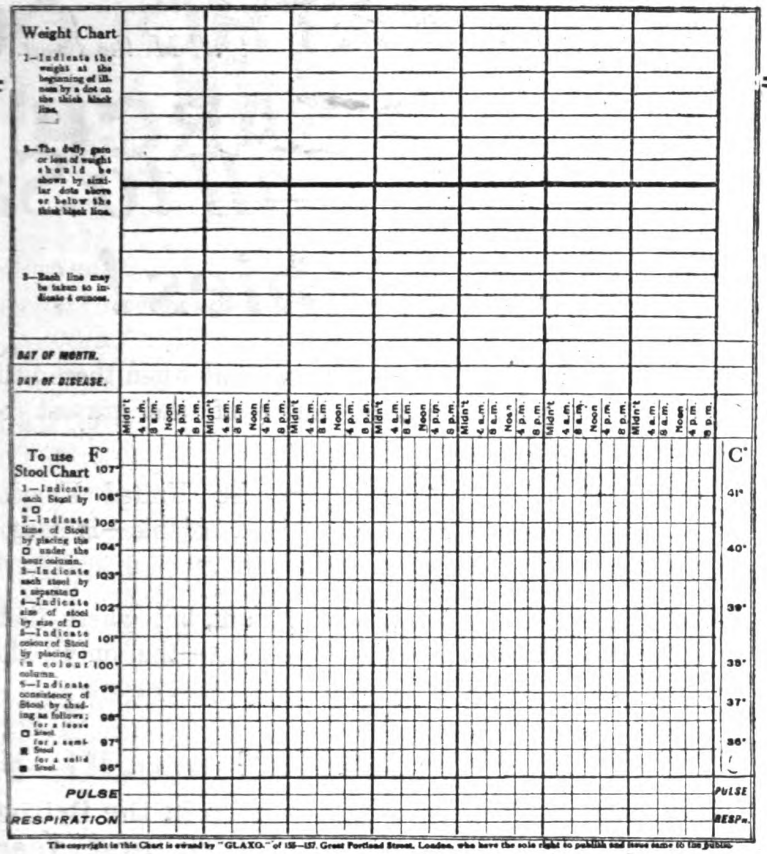
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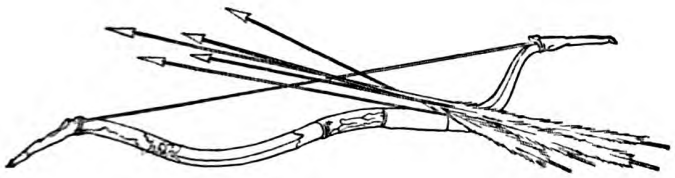
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HOEFFTCKE'S EXTENSION APPLIANCES.

Ambulatory Treatment of Fracture of the Limbs; Tuberculous and Arthritic Disease of Joints.

By C. A. HOEFFTCKE,
7, Harley Street, London, W. 1.

(Continued from June 16th.)

THE following active tubercular knee case was described and illustrated, with splint applied, in the BRIT. MED. JNL., April 16th, 1910, and also in THE LANCET, March 25th, 1911, as one of the worst which could come under any surgeon's notice. The result obtained by means of my extension splint, shown in Figs. 4 and 5, shows that even under the most unfavourable local conditions the tubercular disease can be arrested by mechanical means only, simply by preventing friction between the articular surfaces and aiding the blood supply by enabling the patient to walk about and exercise the joint.

Mr. S. (æt. 21) (see B. M. J., 1910, and LANCET, 1911) was sent to me by a surgeon of the London Hospital towards the end of January, 1910, to have my splint applied. The patient hurt himself playing football in 1906. The knee began to swell and was very painful; several abscesses formed and broke after three months. Attended to at Whipp's Cross Infirmary; admitted as in-patient December, 1906. Operated on June, 1907. Discharged December, 1907, on crutches, with the knee bent and several sinuses suppurating. Surgeon said he could not do any more and advised amputation of the leg, which patient did not consent to. Feb., 1908, introduced to surgeon, London Hospital; taken in April 7th, 1908; operated on April 9th, 1908, parts of necrosed bone taken out. Discharged July 2nd, 1908, knee still contracted; sent to Convalescent Home until July 28th, 1908. Attended out-patient department until Jan., 1910, when Hoefftcke's splint was ordered. The knee was very swollen and painful. In making the instrument I had to avoid pressure on three sinuses which were suppurating. Feb. 3rd, 1910, instrument put on; the angle of contracture was then 130 degrees. Knee straight ten weeks after, two sinuses closed up; walked very well indeed without help of a stick. Steel bar removed and elastic traction substituted, and movement in the knee allowed.

The power of extension used in this case continuously day and night on the ankle, with the tuber ischii as counter-extension, was from 10 to 15 lbs. without producing the least soreness anywhere. My splint was taken off on the 20th October, 1911, and the young man, who was promoted to the Power Station - which entails climbing ladders—has now a strong and movable knee (see Figs. 4 and 5), and an almost hopeless cripple has been made into a useful member of society.

I saw this patient some time ago and he has had no recurrence of the disease since.



FIG. 1. Mr. S. Contracture of knee-joint, T.B., with three sinuses suppurating, on crutches. Feb. 3rd, 1910.



FIG. 2. Mr. S. Knee straight; two sinuses closed up. March, 1911.



FIG. 3. Mr. S. Front view. Leg developed to normal size. March, 1914.



FIG. 4. Mr. S. Showing strength in joint while standing on bent knee and muscles developed. March, '14



FIG. 5. Mr. S Showing range of free movement. March, 1914.

(To be continued August 11th.)

Croonian Lectures

ON

ADAPTATION AND DISEASE.

Delivered at the Royal College of Physicians of London,

By J. G. ADAMI, M.D., F.R.S.,

TEMPORARY LIEUTENANT-COLONEL, C.A.M.C.

LECTURE IV.*

Delivered on June 26th, 1917.

THE PHYSICO-CHEMICAL BASIS OF IMMUNITY AND OF EVOLUTION.

MR PRESIDENT AND GENTLEMEN,—If we endeavour now to gather together the conclusions which may reasonably be reached from a consideration of the data afforded in the last two lectures they appear to be the following.

CONCLUSIONS FROM DATA ALREADY GIVEN.

I. Instead of there being no such thing as direct adaptation or equilibration of the individual to his surroundings in the Spencerian sense, this surely exists and can be demonstrated.

II. In the lowest forms of life, among the bacteria, it can be demonstrated that not only in this adaptation individual but that acquired properties of certain orders are inherited through numerous generations, even when the cause which set up the original modification has ceased to act.

III. It can further be demonstrated that the inheritance is not due to the survival and perpetuation of those individuals only which present the favourable variation. All the members of a given strain of bacteria subjected to a given modification of environment can be made to vary in the same direction and acquire and transmit the same new property.

IV. Immunisation of the higher animals is direct adaptation. There could, in fact, be no clearer demonstration of the process of direct adaptation than has been afforded by the abundant researches upon the production of immunity.

V. It is clearly proved that there are drugs and toxins which, acting on the tissues of the body, act also on the germ cells, causing modification of the latter of such a nature that the offspring resulting from these germ cells is modified.

VI. The clearest evidences of this action are in connexion with drugs and toxins which lead to conditions of defect, but acquired special susceptibility and anaphylactic reaction are also inherited, indications that new properties gained by the germ cells can also be inherited.

VII. The generative system is embryogenetically related to the endocrine system, and is profoundly influenced by the internal secretions of that system. The indications are that influences from without affecting the organs of internal secretion and modifying their secretions may, through the hormones, &c., of the internal secretions, so influence the germ cells that the offspring are affected in the same direction as the parent, and that thus acquired metabolic disturbances in the parent, whether of the nature of defects or acquirements, are capable of being inherited.

To the academic biologist the suggestion of a direct action of external agencies as the prime cause of variation is as shocking and as improper as would be the suggestion of a risqué story to some dear and prim old maiden lady. To the biologist of to-day the conclusions above noted are heterodoxy pure and simple. And yet it is along these lines that medical research is surely leading us. And what is more, these conclusions harmonise with the experiences that come to us day after day in studying our patients and their families.

WEAKNESS OF THE MORPHOLOGICAL CONCEPT.

Believing that we are in the right, where is it that the biologists have gone wrong?

I venture to suggest that, from the morphological trend of their studies, in striving to form a mental picture of the process of evolution biologists have perforce conjured up separate individual particles or molecular structures, each of which is the bearer of an individual property or group of properties. Their conceptions have perforce been in the terms of specific atomies.

We see this tendency elaborated—and, in his great sanity, cast aside—by Charles Darwin in his pangenesis hypothesis. It was exhibited again *à merveille* by Weismann with his ids, idants, determinants, and the like, pure figments of the imagination which, nevertheless, have influenced and affected all our generation. It has shown itself and been carried forward in full vigour by the Mendelians: one has only to consult their diagrams to see how obviously their conceptions and explanations assume a structural form. It is because he cannot picture in his mind an atomy, or structure, making its appearance in the germ cell, like Venus arising out of the sea foam, and henceforth becoming a portion of the hereditable substance of that cell, that Professor Bateson finds it impossible to imagine the positive acquirement of new properties by the individual, and so is driven to the remarkable hypothesis quoted in my first lecture.

But before all it is the Freiburg philosopher who has led our generation of biologists into Nephelococcygia—"Cloud Cuckoo-land." Much as we owe to him for arresting the vague generalisations upon heredity prevalent until the "eighties," and for his confirmation, experimental and otherwise, of Galton's doctrine that conditions such as mutilations and use acquirements are not inherited, I myself am inclined to think that Weismann's teaching has, on the whole, done more harm than good. He was a pure morphologist, and his hypothesis was purely morphological. Had he been familiar with the physical chemistry of his day he could not have ventured to publish it; had he been a physiologist with any appreciation of function he must have modified it extensively. It is, in short, an impossible hypothesis, and in a very extraordinary manner all its main postulates are found contrary to experience. As I pointed out nine years ago,[1] our knowledge of the size of the molecule of albuminous matter renders the existence of thousands of individual molecular determinants in the minuter portions of the nucleus a matter of sheer impossibility—they could not be packed in the space. If I remember aright, it was Herbert Spencer who pointed out that in one feather of the peacock's tail there are 480,000 regions or parts capable of independent variation, and that, therefore, so Weismannism demands, in each of the many microscopic "ids," or chromosomes, in the nuclear chromatin of the peahen's ovum there must be 480,000 determinants for each tail feather alone. How many for the rest of the body passes computation!

It is this faulty and untenable morphous or morphological concept of unit-properties and hereditary entities that makes it as difficult for Professor Bateson to picture how new accretions (whereby he images new discrete determinants) can make their appearance in the germ cell as it was for King George of glorious memory and muddled to imagine how the apple got into the dumpling.

THE CONSTITUTION OF LIVING MATTER.

Suppose now we start instead from known facts and known phenomena, and endeavour upon these to build up our idea of the structure and nature of the germ cell, and so of the organic basis of heredity, variation, and evolution.

What in the first place do we know of the constitution of living matter? Will this help us? I think it will. We know that whatever form of life we investigate, be it in animal or plant, mammoth or microbe, whatever form we analyse, and whatever tissue of that form we analyse, leaving out of account water and certain common vehicular salts to which no specific vital functions can be attributed, just one order of highly complex organic compounds is common to, and to be isolated from, all forms of living beings, and these are the proteins. This characteristic universal presence of these highly complex organic compounds in itself indicates that they are intimately associated with vital functions. It is true that when we isolate them chemically they are inert—in other words, in the living organism with its many activities they are evidently present in another form; living matter, therefore, as I have expressed it elsewhere, contains as an essential constituent *proteidogenous* rather than proteid matter.

The Structure of the Proteins.

But the structure of these proteins, as worked out first by Curtius and Schutzenberger, and as more fully demonstrated

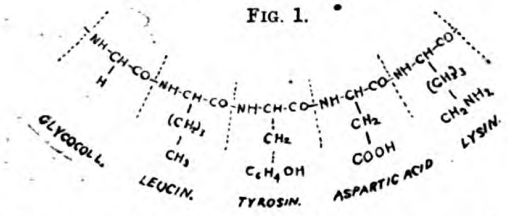
* The previous lectures were briefly summarised in THE LANCET, I., 1917, i., 921; II., 1917, i., 961; III., 1917, ii., 20.

[1] Adami, Principles of Pathology, vol. i., first edition, 1908.

by Emil Fischer through the actual synthesis and building up of bodies of protein nature in the laboratory, is highly significant. They are molecules so large that they will not pass through fine filters, giant molecules but a little below the limit of visibility under the highest powers of the microscope. Take one of the simpler crystallisable proteins —namely, hæmoglobin; its composition appears to be approximately $C_{712}H_{1130}N_{214}O_{215}Fe,S_2$; in fact, the average molecular weight of proteins has been estimated at about 15,000, or roughly one thousand times that of a molecule of water. And the hæmoglobin from each species of vertebrate is a different chemical substance: nay more, our researches in immunity indicate that there may be differences between the hæmoglobins of two members of the same family. Certainly, no two analyses of separate samples of crystalline hæmoglobin obtained from the same species give identical results. By digestion, as every board-school child knows, we break these proteins down into peptones and albumoses. By further disintegration Kossel and others have broken down these peptones and protones into their constituent amino-acids, bodies belonging to the fatty acid series—aminated fatty acids. What Fischer has done has been to manufacture these aminated fatty acids (acetic, propionic, &c.) in the laboratory, and then he has accomplished the reverse process of linking these together, until with five, ten, fifteen, and more linked together he has obtained bodies affording the chemical tests for peptones.

Now these amino-acids have one striking property—they are amphoteric: they possess both acid and basic properties:

FIG. 1.



acid, because of the contained COOH group or groups, basic, through the NH_2 group or groups. Thus we conceive these peptones as composed of polymerised molecules, formed in the main of amino-acid molecules linked together by their otherwise unsatisfied NH and CO affinities. Thus to modify Hofmeister's illustration we may represent a portion, at least, of the peptone molecule (Fig. 1).

Each section between the dotted lines represents an amino-acid nucleus. I speak of these as glycocoll, leucin, &c., but it will be seen that in the leucin nucleus, for example, an H of the NH_2 group is replaced by the CO of the glycocoll nucleus, and the hydroxyl of the COOH group by the NH of the tyrosin nucleus. In Fischer's terminology the nucleus is leucyl, not leucin. The peptone molecule is thus represented as composed of a main chain in serial repetition of glycocoll molecules—

$$(H) - NH.CH.CO - (OH)$$
$$\quad\quad\quad

inherits either from the male or from the female parent. The conclusion is inevitable that the biophoric molecules are conveyed in and by the nuclear chromatin. In the bacteria which are so lowly that they possess no central nucleus, we observe, nevertheless, that chromatin-like granules are scattered through the body substance, and that in binary division these chromatin-like granules undergo a certain simple accumulation or arrangement, to the end that each of the daughter cells is endowed with half of this specific chromatin-like material.

FIG. 4.

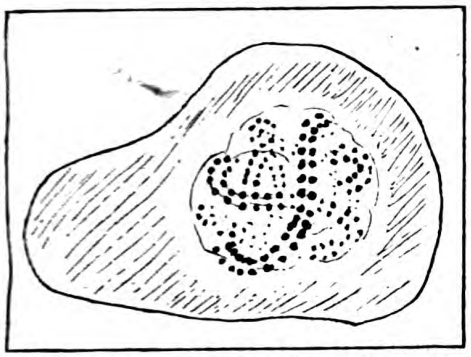


Diagram of cell showing beginning of nuclear mitosis: "skein" stage, the thread formed of a double beaded row. Each bead is one of the "chromomeres" referred to in the text (Weismann's "ids.")

Or otherwise, whereas in these lowest forms the living cell substance is made up of granules of chromatin, each surrounded by an area of cytoplasm, higher up in the scale these granules of biophoric matter are collected into a central node—the nucleus—which is separated from the circumambient external medium by the cytoplasm or cell-body. We may, indeed, speak of a triple protection—namely, the cell-wall or membrane, the cytoplasm, and the nuclear membrane, all of them, on the whole, acting as conservative agents, tending to preserve the biophores from sudden change from without. (Fig. 4.)

Vital Processes of the Cell.

But to continue, as it were, to rehearse our catechism, while on the whole conservative, this system is exposed to constant change, owing to the fact that it is not inert but is constantly reacting with that external medium, receiving matter from the same either (1) in bulk (phagocytosis), or (2) by diffusion, or (3) by surface absorption, and discharging other matter into the same (excretion). And if we study carefully these processes of assimilation and discharge it is to be made out that the outer cell membrane is semi-permeable, preventing the entrance of certain substances, permitting the entrance of others, whether directly, or after a preliminary dissociation of the same into simpler molecules by means of its extracellular secretions. And once these foodstuffs are taken into the cytoplasm, there again they are, if necessary, broken down still further into yet simpler molecules by intracellular enzyme action.

It is being more and more surely established that these enzymes are of nuclear origin, resulting from the discharge of certain constituents from the nuclear substance, but this is not a necessary part of my argument. The essential point is that the foodstuffs, protein, carbohydrate, and hydrocarbon are not utilised by the cell as such, but are dissociated, and it is these disintegrated and dissociated molecules that are utilised by the cell in one of two ways—either to supply energy for the performance of work or, on the other hand, for growth.

The Nature of Growth.

I feel almost apologetic for taking up time over such elementary matters. And yet these are matters that, while absolutely basal, are absolutely neglected by ordinary biologists. Take, for example, this matter of growth. With all the extraordinary width of his learning D'Arcy Thompson has just achieved a work of some 750 octavo pages on "Growth and Form," full of most interesting observations and data, and with a distinction of style that is a pure delight, but with little more than a page devoted to the essential nature of growth of living matter, and that page upon the text that the older naturalists laid stress upon the fact or statement that inorganic bodies (crystals) grow by agglutination, organic bodies by intussusception. The living cell, he states,[4] grows very much as a piece of glue swells up in water, by "imbibition" or by interpenetration into and throughout its entire substance. From his statement growth might be nothing beyond the absorption of water by a semi-fluid colloid mass. Now one has only to consider a moment to see that "intussusception," "imbibition," "intercalation" are nothing more than bald and blank terms. They are inane; they cannot possibly explain how two molecules of living matter appear where there was but one before, two grains of wheat where one was put into the ground. Growth is one of the great underlying phenomena of living matter, and zoologists and botanists have in a simple Topsy-like manner been satisfied that the phenomenon occurs, and have been amply content to rest with the demonstration of the stages of mitosis and cell division.

But what has happened to the cell substance that precedes and impels mitosis? Obviously there is an increase in the amount of living matter, and this translated into physical terms means a multiplication of the molecules of living matter, or, as I term them, the biophores or biophoric molecules.[5] If we regard these complex proteidogenous molecules as a chain, or more simply as a ring of amino-acid radicles, there is but one way in which this can multiply—namely, by the same method as obtains in the growth of a crystal. Let us take the simplest case, that of the crystallisation of sodium chloride out of watery solution. We know that when the solution or dilution of the sodium chloride reaches a certain point the salt separates into its constituent ions of sodium and chlorine. But while separated these maintain a certain relationship or association. It is remarkable that the chlorine ions do not escape or volatilise into the air. When the concentration of the solution reaches a certain point each ion of chlorine unites with a corresponding ion of sodium, and, aided by a sharp point or inequality of the surface of the containing vessel, the process of crystallisation begins. The very existence of one crystal is seen to cause other junctions to occur in its immediate neighbourhood, and, indeed, just that one series of junctions necessary to form sodium chloride. Despite the presence of other salts in solution, we gain pure, or almost pure, crystals of the one substance. We have in this way growth of solid sodium chloride.

Growth of living matter, if more complicated, because the structure of the biophores is more complicated, must nevertheless be of the same order. Its nature is best suggested by the following diagram:—

FIG. 5.

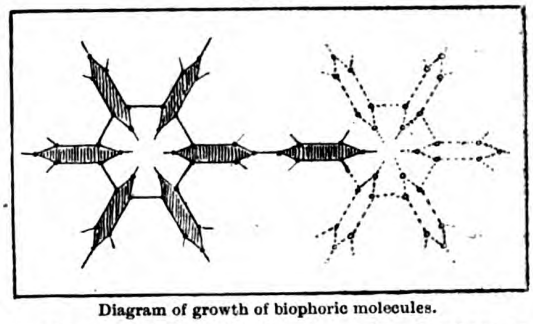


Diagram of growth of biophoric molecules.

—namely, granted that the already existing biophore finds itself in a medium—the nuclear cell sap—containing the necessary radicles, should that by one of its attachments attract to itself one of its component radicles there is then started a process by which, in orderly sequence, the other radicles become attached until there is built up a compound molecule, identical with the pre-existing molecule, in association with which it has become developed.

This conception—namely, that the growth of the biophores or otherwise of the molecules of living matter is essentially of the same nature as is that of crystals—is materially aided by the recognition that crystallisation does not of necessity demand the production of rigid rectilinear figures; that, as

[4] Growth and Form, Cambridge University Press, 1917, p. 203.

[5] I employ this term, introduced by Weismann, rather than manufacture a new term, because our fundamental conception is identical, although it is necessary to point out that our ideas as to the constitution of the biophores do not entirely harmonise.

Lehmann[6] was the first to point out in 1904, there are in nature abundant examples of fluid, non-rigid, crystalline forms, and as Aschoff and I were the first to note[7] in 1906 the animal organism affords abundant examples of these fluid crystals. As D'Arcy Thompson well remarks,[8] "the phenomenon of liquid crystallisation does not destroy the distinction between crystallisation and colloidal forms, but gives added unity and continuity to the whole series of phenomena."

REVIEW OF SOME CONCLUSIONS LED TO.

But if we accept these views regarding the existence of biophoric molecules and the essential nature of growth as involving a multiplication of the same by a process akin to crystallisation, we are inevitably led to certain very interesting conclusions which may here be rapidly passed in review. Each, it is true, might well be expanded into a chapter, but the limitations set by this course of lectures demands that I do little beyond indicating the headings.

1. *The Continuity of the Germ Plasm.*

Weismann conceives his biophores and determinants as handed down direct from parent to offspring, so that the germ plasm of a thousand generations back is contained in the germ cells of the generation of to-day and has its influence upon the configuration of the body of the individual derived from those germ cells. This he speaks of as the continuity of the germ plasm.

But, obviously, this is not a continuity of substance, as Weismann implies, but merely a potential continuity of molecular arrangement and constitution. For growth and multiplication of the living molecules, for one conjugated ovum and spermatozoon to give rise to the countless millions of sperm cells of the male of any of the higher animals[9] there must be such active reproduction of the parental biophores that the chance of one of the original biophores of a grandparent finding itself in the nucleus of a sperm cell must be infinitesimal. The likelihood is that while such, it is true, control the constitution of the new biophores they sooner or later, in the metabolic processes of the cell, become dissociated and broken down.

2. *On the Functional (Katabiotic) and Vegetative (Bioplastic) Activities of the Cell and the Individual.*

In unicellular organisms the growth of the individual presents itself merely as increase in size; in multicellular organisms, while there may be increase in size of the component cells to a certain extent, growth is brought about in the main by cell proliferation and increase in the number of the component cells. But both in protozoa and metazoa (and protophyta and metaphyta, if the terms be permissible) there are limits to this process. Here I would but rapidly refer to what constitute these limits—namely, they are conditioned by the relationship or interaction between the individual and its environment. Broadly speaking, the individual continues to grow until an economical mean is established between the amount of foodstuffs afforded by the environment and the absorptive surface that the individual can present to that environment. It is, as I have pointed out, a false conception to regard the multicellular organism as a colony of individual cells which remain united for self-defence and mutual advantage. Rather it must be recognised that where the unicellular mass of protoplasm undergoes enlargement the greater the mass the smaller relatively becomes the surface area, and this diminution proceeds in a rapidly increasing ratio, until growth is arrested by the fact that the amount of foodstuffs absorbed cannot keep pace with the needs of the organism. Nuclear and cell division and multicellularity constitute the simplest mechanism whereby the nuclear and cell surface areas can be increased in a yet greater ratio, and the greatest effective working of the individual obtained by decentralisation; whereby we may regard the mass or size attained by the mature individual of any species as representing the sum total of protoplasmic matter of the constitution peculiar to that species, which is capable of existing as an entity under the particular conditions of its environment, the multicellular individual acquiring its greater size and more complex activities by means of nuclear followed by cell division.

In either case, whether in the unicellular or in the multicellular organism, the individual continues to grow and exhibit predominantly vegetative activities until it reaches this limit of economical relationship between itself and its environment. In the very earliest stages the vegetative activities alone are evident; as the above-mentioned limit is approached these become less and less, and the cells are more and more engaged in functional activities—that is to say, they utilise the foodstuffs received, not in building up more living matter, but for the performance of work and liberation of energy. And to the extent that growth necessitates a building-up process from the foodstuffs presented to the cell, and function necessitates a breaking down and burning up[10] of the same foodstuffs, to this extent the vegetative or—as Weigert terms them—bioplastic, and the functional or katabiotic activities are opposed processes.

3. *Metabolism.*

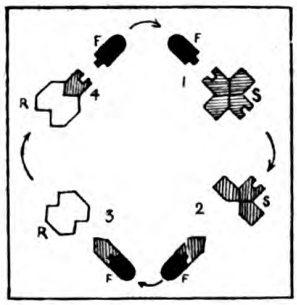
It may be thought that in mentioning these matters I am wandering far afield, and through a singularly arid field at that—nay more, that I do but touch upon or outline matters which to be grasped in all their bearings need a much fuller presentation. I touch upon them purposely in order to emphasise that these matters of adaptation and evolution have of necessity to be approached from the aspect of function and the dynamics of living matter, rather than from the point of cell statics. "Function," it has been said, "precedes structure," and it is the study of cell function that must afford the key.

If next we proceed to inquire into the state of our knowledge of the chemistry of these active processes occurring within the cell we reach a further stage, for the more we study the processes of absorption of food and utilisation of the same—the metabolic processes, whether, as Gaskell termed them, of anabolism, building up, or katabolism, breaking down—the more it is borne in upon us that the greater number—some would say all—are the outcome of enzyme action.

4. *On Enzyme Action.*

This is not the place to discuss the nature of enzyme action in detail. For the most authoritative reading upon the subject Professor Bayliss's works should be consulted. Suffice it to say that the simplest and now generally accepted view is that there exist in the cell and are discharged from it intermediary bodies—katalysts—which promote and hasten chemical dissociations and associations without themselves being involved in the final stage, and that the simplest diagrammatic representation of their action is as indicated in the diagram (Fig. 6), in which F represents the go-between, the body endowed with enzyme action, S the substratum, or body which undergoes dissociation, and R the receptor, or body which is aggrandised, with which the dissociated moiety or part of the substratum enters into union. There are, I hold, always these two phases of dissociation and association in each instance of ferment activity, even if F be but a hydrogen or hydroxyl ion. The process is comparable with the katalytic process of manufacture of concentrated sulphuric acid from sulphurous anhydride, through the agency of nitrous acid. The nitrous acid, HNO_2, takes up a molecule of O from the air, becoming nitric acid, and acting as carrier, gives this over to the sulphurous anhydride H_2SO_3, converting this into sulphuric acid H_2SO_4, with this becoming free itself to take up another molecule of oxygen and repeat the process with another molecule o

FIG. 6.



[6] O. Lehmann: Flüssige Crystalle, Leipzig, 1904.

[7] Adami and Aschoff: Proc. Royal Soc. B., 1906, 359; Adami: The Myelius and Potential Fluid Crystals of the Organisation. Harvey Lectures, second series, 1908, 117; and Aschoff: Verhandl. deutsch. pathol. Gesellsch., 10, 1907, 166.

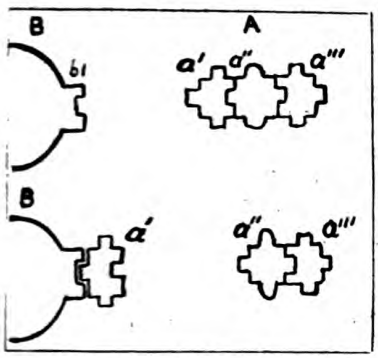
[8] Loc. cit., p. 204.

[9] According to Loeb the average seminal ejaculation in man contains 226,000,000 sperm cells.

[10] It is not (as one is apt to imagine) the dissociation of the foodstuff that liberates energy, but the burning up of the same—i.e., the oxidation of the dissociated foodstuffs.

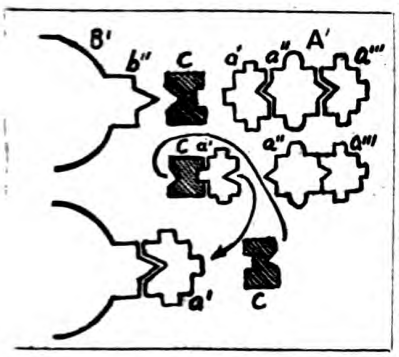
sulphuric anhydride. And the process continues until a certain equilibrium is reached between the amount of anhydride and of sulphuric acid present, unless the H_2SO_4 be removed so soon as formed, in which case eventually a trace of nitrous acid can convert a maximum, or theoretically infinite, amount of anhydride. And this action is, under certain conditions, reversible.

FIG. 7.



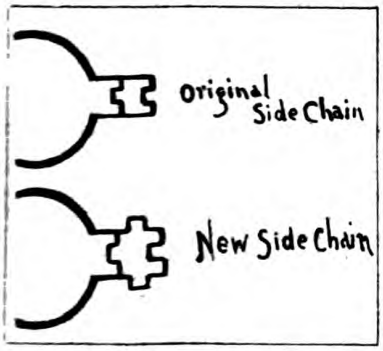
Now, as I have already stated, the evidence is conclusive that none of the ordinary foodstuffs—the proteins, carbohydrates and fats, are utilised by the living cell as such; through enzyme action, whether extracellular or intracellular, they are broken down into simpler substances, into their component radicles. The evidence is accumulating yearly more and more that, if not the enzymes themselves, at least the zymogens, the bodies from which the enzymes are derived, originate in, and are discharged from the nucleus, the dynamic centre of the cell. Already there is evidence that certain of the amino-acids, and it may well be of groups of conjugated amino-acids, constituting Fischer's polypeptids, manifest enzyme action. Their amphoteric constitution in itself favours the possession of these properties.

FIG. 8.



We can visualise the process thus: Let A (Fig. 7) represent a peptone or polypeptid molecule of foodstuff small enough to be absorbed or diffused from the external medium into the cytoplasm of the cell. This may either (1) be broken down into simpler radicles, a' a'' a''', and those radicles utilised by a direct dissociation process for the growth of the proteins of the cytoplasm or, it may be, the nuclear biophoric molecules themselves (B), through an unsatisfied linkage exercising a stronger attraction for certain of the constituent radicles of A, such as a', in which case a' becomes part and parcel of B and a'' and a''', whether combined or loosened, are left free in the cytoplasm; or (2) where the conformation (that is to say, constitution) of A and of B (or better A′ and B′, Fig. 8) is not such as to permit of this direct attraction and linkage, it may happen that free radicles suspended in the cytoplasm may possess the necessary linkage, and in that case these will act as catalysts or enzymes, first attracting away to radicle a' from A′, and then in turn by superior attraction being impelled to give it up to satisfy the linkage b'' of B′.

FIG. 9.



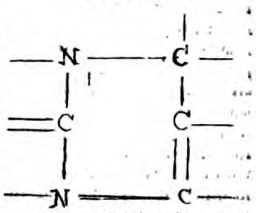
5. *Possibilities Arising out of Above View of Enzyme Action.*

But if this conception and visualisation of enzyme action approaches the fact, do you see where it leads us? I am not going to take up all the lines of thought and possibilities opened up by this conception, but only those bearing directly on my theme.

(1) In the first place the remains of A left free in the cytoplasm, if of amphoteric type, may in itself act as a catalyst.

(2) In the second we are given an understanding of the mechanism whereby foreign proteins may be utilised by the cell. Those proteins are complexes with multiple linkages: they are composed of combinations of the various amino-acids, and the number of amino-acids is limited. It is, therefore, inevitable that enzymes, whether extracellular or intracellular, will loosen and detach certain of the radicles, thus dissociating the protein and affording foodstuffs capable of being utilised by the cell. But doing this, to take the simplest case, the relative numbers of molecules of the different amino-acids presented to the cell and to its nuclear biophores will differ from the normal, and, if the exhibition of the foreign protein continues, so gradually will there be developed a tendency for the proportion of the radicles constituting the biophoric molecules to vary, those deficient in number being replaced by those that are abundant.

FIG. 10.



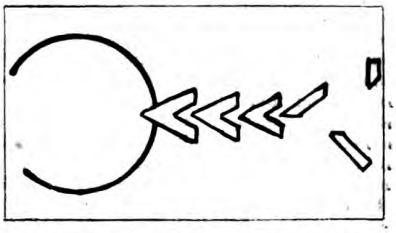
The pyrimidine ring.

Or, again, the simpler complexes due to the breaking down of the foreign protein may not be identical in constitution with those which prior to the exhibition of the foreign protein had been attracted to, and had constituted certain particular side-chains of, the biophoric molecules. In this way, again, the constitution of the biophores may become altered. This we may visualise as shown in Fig. 9.

I would recall how a slight difference in the relative attachments of the side-chains, say of the pyrimidine ring (Fig. 10), alters the chemical properties of the compound; in like manner what may appear to be but a slight modification in the constitution of a biophoric side-chain may be expected to lead to material differences in the reactions of the whole molecules—that is, in the case of germinal biophores—of the individual.

(3) One more postulate needs to be laid down. You will remember how I pointed out in my second lecture that the introduction of toxins, whether phytotoxins like abrin or bacterial toxins like those of diphtheria and tetanus, lead to the abundant if not over-production of antitoxins on the part of the cells.

FIG. 11.



The simplest explanation of this continued production is that when the toxin (which has all the properties of an enzyme) enters the cell it combines with and detaches certain side-chains. Whether the cell in consequence becomes destroyed or, on the other hand, succeeds in neutralising the toxin depends upon two factors—the number of toxin molecules that gain entrance and the rate at which the cell can reproduce the lost side-chains. Just as a damaged crystal, if placed in a saturated solution of the particular salt, repairs itself so we have to assume the capacity on the part of the living molecules to build up lost parts. So long, that is, as the toxin in the cytoplasm acts as a catalyst detaching the particular side-chains for so long will the molecular complexes build up side-chains until from the law of habit the function of formation of this particular order of side-chain in excess of the previous needs of the cell becomes established (Fig. 11), continuing even after the toxin has become either used up or discharged from the cell.

6. *Cell and Tissue Differentiation: Ontogeny.*

With this clear indication, therefore, before us of the way in which the cell substance can become modified and adapt itself according to need, it is not necessary, with Weismann, to postulate the existence of two orders of living matter, *germ plasm* and *somato-plasm*. It suffices to hold that there is one common biophoric material—or, at most, biophoric material in part derived from one, in part from the other parent—and to recognise that as the fertilised cell divides and re-divides and the resultant cells find themselves in different relationships so do they become modified and differentiated, giving origin to the various tissues, the eventual germ cells being so developed and so placed that they are exposed to the minimal amount of differentiation.

If embryogeny, or more exactly ontogeny—the development of the individual—is a recapitulation of the phylogeny—of the evolution of the race—it is this not as an historical reminiscence. It is this only so far as it is a necessity, only so far as, for the unfolding and elaboration of the cell structure of the various tissues up to the stage in which the adult of a particular species will find itself in equilibrium with its surroundings, the biophores distributed to those cells must of necessity in the course of their growth and multiplication pass through a particular succession of modifications, of accretions and losses, the one phase inevitably leading to the next. Where a given modification can be attained by a short cut there certain phases of the phylogeny fail to be recapitulated. In short, the development of any particular tissue may aptly be compared with the synthesis of one of the higher organic compounds. That cannot be accomplished by taking so much carbon, hydrogen, nitrogen, &c., mixing and heating them together, but demands a long process of building up—it may be a score or more successive processes of combinations, associations and dissociations—before the final product is attained; the constant endeavour of the chemist being to simplify the process, to arrive at the same results by finding some reaction which will cut out half a dozen or more of the steps and lead more rapidly and more economically to the same result.

7. *Amphimixis.*

This mention of the contribution of the two parental germ plasms to the fertilised germ cell, or zygote, leads to certain important considerations. If the metabolic activities of the cell are of the order here stated, and if, as is evident from the studies of cytologists and embryologists, equivalent amounts of heritable material—or biophores—from the two parents reach the zygote and, in the subsequent process of active cell division of the embryo, are contributed to each cell—i.e., to each cell nucleus—again the static conception cannot be permissible. We must realise that these two orders of biophores, existing in each cell of the body and activating each cell, are throughout life undergoing growth, building up side-chains and radicles, and that there is a constant recurrence of processes of association and discharge from each molecule out of, and into, the nuclear sap. But if this is the case, and the two orders of active living molecules lie side by side in the fluid medium of the nucleus, it is impossible to imagine, according to the current Mendelian doctrine, that the two do not interact one upon the other, that the two orders of side-chain substances and dissociation products keep severely apart. We may safely say that there must be interaction: that where radicles and groups of radicles built up by biophores of the one order become dissociated from those biophores, if of an order common to both paternal and maternal biophores, they may be employed indifferently in the building up and growth of biophores of both orders; if of an order peculiar to, say, the paternal biophores, they may under certain conditions be attracted to and built into the growing maternal biophores. We can imagine environmental conditions favouring the predominant growth of just the one group of biophores so that the cells of some one tissue take on the characters of the cells in the one parent, or, more easily, in actively working tissue cells, such an interchange and selection of allelomorphic radicles that eventually one common type of modified biophoric molecule may govern the cell.

And at a slower rate due to their more latent state, this same interchange, we must predicate, is capable of occurring in the biophores of the germ cells, so that eventually a succession of heterozygous generations will give rise to forms without the pure dominant gross characteristics, but showing an approximation to intermediate properties[11]; or, again, eventually, the interchange of radicles may be such that the various dominant radicles belonging to both orders of biophores be attracted to, built into the growing molecules and reproduced by the biophores of one parental origin—whereas the biophores of the other origin in their growth may show a greater affinity for the radicles whose constitution leads to the appearance of recessive qualities.

The existence of determinants as entities, as I have demonstrated, cannot on physical grounds be accepted, and if in their place we accept differences in the constitution or arrangement of individual radicles composing essential portions of the combined and complex molecules of living matter, it is still possible to interpret the facts of Mendelism, and, indeed, interpret not a few phenomena which by the hypothesis of determinants cannot be explained.

SUMMARY OF HYPOTHESIS.

However, I realise that, addressing medical men, here I advance into regions outside the boundaries of current medical thought. To sum up, it may be said that, according to this hypothesis, each species must be regarded as having for its essential living matter a distinct organic compound, a compound as distinct as any inorganic salt, but differing from that simpler inorganic salt in that, whereas the central ring or chain is of fixed constitution, the radicles composing that ring or chain are capable of attracting, and then of reproducing a series of side-chains which may vary, so that within the species there may be various strains, just as we may speak of various strains of crystalline hæmoglobin being obtained from different samples of human blood.

Let me freely admit that the diagrams here afforded have been very crude. With the necessarily condensed presentation of my subject they have seemed to me essential. To those unfamiliar with the advanced organic chemistry of to-day, to have attempted illustrations of the successive stages of my argument by elaborate graphic chemical formulæ would have been worse than useless. I shall be satisfied if I have rendered it clear that it is possible to replace an impossible hypothesis based upon supposititious, independent, and transposable determinants by one based upon what we know of the composition and physical structure of the main and outstanding constituent of living matter—the proteins—a hypothesis that renders it possible for us to understand how digestion or, more broadly, metabolism, is the keynote of the whole matter; how through this universal system of dissociation of foodstuffs into their elemental radicles it is possible for the cell to utilise and accustom itself to new and foreign foodstuffs; how doing this, the constitution of the living molecules may become altered; and how Professor Bateson's incapacity to comprehend the possibility of progressive acquirements by the individual and his germ cells is due to his static method of approach to the subject. To one who regards life, not from the morphological point of view, in terms of form, but from the physiological, in terms of function—who regards life as a moving equilibrium, who regards it as in essence "a state of persistent and incomplete recurrent satisfaction and dissatisfaction of ..... certain proteidogenous molecules," and metabolism as the primary and basal characteristic of living matter—for such an one there exists no such stumbling block.

Progressive Accretion of Properties.

Just as Weismann's hypothesis of heredity breaks down owing to the sheer physical impossibility of all the determinants it demands being packed into the microscopic nuclear chromosome, so the Batesonian hypothesis of backward evolution by the progressive removal of inhibitory factors, like the baseless fabric of a vision, fades into nothingness once it is confronted with the demonstration that positive, direct acquirements can surely be brought about. Both hypotheses, indeed, enter into the limbo of the past, as examples of the Spencerian tragedy—that of a deduction destroyed by a fact.

I imagine that it will be your experience—it certainly has been mine—that it is those whose gentle birth is least obvious and genealogy most dubious, those who hang on to t

[11] As in Correus's observations upon the hybridisation of the t strains of *Mirabilis jalapa, alba* and *rosea*, in which the heterozygotes the F. generation are not of strong dominant rose colour, but of a pa dilute pink.

border-line of good family, who most vaunt themselves regarding their descent. They do not realise that in these days it is a man's ascent that ennobles him, not his descent, even if, paradoxically, ascent is not possible without good rich blood: it is the progressive accretion of properties, not the progressive loss. But, suggests Professor Bateson, in nature it is the opposite: it is by the progressive loss of properties that from being an amorphous mass of protoplasm man has become man. Life, according to him, first appeared upon earth enshrined in matter of maximum complexity, so complex that it was without form and void, and only as through the vast æons of geological time, this matter fell into order and simplified itself, and successive species developed, did we eventually in these latter days arrive at that simplest and least complex of all creatures, man—simple man.

Does it not appear to you that this is topsy-turvydom? Is it not, on the face of it, more probable that the reverse has been the case—that the earliest matter that could be recognised as living was the simplest. It is not that the earliest living matter possessed all the determinants of all the organised parts of all future forms of life, but that its constitution was such that it possessed, in consequence of its metabolic activities, the potentiality to undergo progressive modifications of that constitution, which modifications manifested themselves, as an outcome, in progressive changes of structure. *The potentiality was there, not the determinants.*

CONCLUSION.

One last word. I feel that, as one on active service, some apology may be required from me for having taken your time and, it may be said, my country's time, in dealing in the course of these four lectures with a matter so wholly foreign to the war, to military medicine, and military duties. Were what I have placed before you wholly new, had I collected, thought out, and elaborated the material of these lectures during the two years since I received the invitation to deliver the course, an apology would, I think, rightly be in place. As a matter of fact, these lectures are little beyond what I have taught and written in the 15 years and more preceding the war; they are a digest and compend of those earlier writings and conclusions, brought up to date by means of an occasional modern instance confirmatory of that earlier work. Fours hours ago, at lunch time, in order to complete my bibliography, I went to the library in Wimpole-street and took out the volume of the *British Medical Journal* for 1901, containing an address delivered by me at Brooklyn, New York, in May of that year.[12] That address I had not looked up for a decade or so, and it was not with a little surprise that I found laid down there the physico-chemical conception of inheritance here given, and the doctrine of direct inheritance of metabolic conditions, such as gout and of disturbances of the internal secretions. Rather, therefore, the apology should be that I have plagiarised myself in so wholesale a manner. I shall, however, be satisfied if in these Croonian lectures it is demonstrated that the work of medical men of this generation, of pathologists and bacteriologists, work founded upon the observations and methods of the great biologists of the past, is repaying the debt to biology by establishing principles which are basal for general biological advance.

[12] Brit. Med. Jour., 1901, i., 1317.

AN INDIAN CIVIL MEDICAL SERVICE.—The desirability of a separately recruited Indian Civil Medical Service, lately considered by the Royal Commission on the Public Services in India, has been decided in the negative, at all events, for the present. The general feeling in India appears to be that the question will arise in an acute form after the war. Numbers of civilian medical officers are now employed in important if not very lucrative civil surgeoncies.

A SCHOOL OF MASSAGE.—University College Hospital, Gower-street, W.C., and the National Hospital for the Paralysed and Epileptic, Queen-square, W.C., have appointed a joint committee to manage a school of massage and allied treatment on behalf of the two hospitals. The school is situated in Queen-square, Bloomsbury, and has been named the National Hospital and University College Hospital School of Massage and Electrical Treatment. The curriculum will include the teaching of massage, remedial exercises, and medical electricity, and it is expected that the first term will commence early in October. There is a comfortable hostel in connexion with the school for the use of students who desire to be resident.

PURULENT BRONCHITIS.

A STUDY OF CASES OCCURRING AMONGST THE BRITISH TROOPS AT A BASE IN FRANCE.

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THE numerous cases of purulent bronchitis which have arisen at one of the bases in Northern France during the winter of 1916–17 have presented features of marked clinical and pathological interest. Patients suffering from this unusually fatal disease present a symptom complex so distinctive as to constitute a definite clinical entity. The results of bacteriological and post-mortem examinations tend also to support this belief. The earlier cases were admitted during December, 1916, but it was not until the end of the following January, when exceptional cold prevailed, that the disease assumed such proportions as to constitute almost a small epidemic. Later, when the frost abated, there was a very striking diminution in the number of cases.

The disease has been very fatal. This is shown most readily by post-mortem records referring to this period. During February and early March, while the outbreak was at its height 45 per cent. of the necropsies in this area showed the presence of purulent bronchitis.

It is proposed to discuss this condition from three standpoints: (1) that of the clinician; (2) that of the bacteriologist; and (3) that of the morbid anatomist.

1. THE CLINICAL ASPECT.

Clinical types.—The cases which came under our notice can be divided broadly into two types.

The first and more acute presents a clinical picture which closely simulates ordinary lobar pneumonia with a sustained temperature of about 103°, and expectoration at first blood-streaked—rather than rusty—which, however, rapidly becomes quite purulent. The pulse-rate in these cases is out of all proportion to the temperature in its rapidity. Dyspnœa and cyanosis are prominent features. The patient usually dies from "lung block," resulting in embarrassment of the right side of the heart on the fifth or sixth day. For the last day or two there is often incontinence of the fæces, due, no doubt, to the condition of partial asphyxia. The mental state is one of torpor; delirium is the exception.

The second and less acute type is marked by a more swinging temperature with a range of 2° or 3°. The expectoration at first may be frothy and muco-purulent, but it very soon assumes the typically purulent character. This form may run a long course of from three to six weeks, during which time the patient wastes a great deal and has frequent and profuse sweats; indeed, at a certain stage the illness is most suggestive of acute tubercular infection, and it is only by repeated examination of the expectoration that the clinician can satisfy himself he is not really overlooking a case of acute pulmonary tuberculosis. The majority of our cases conforming to this type have ultimately recovered, but the convalescence is slow and tedious.

Detailed Symptomatology.

Onset.—Whilst a history of a previous catarrhal condition lasting for a few days is often obtained, the disease quickly assumes an acute character; we have been able to observe this in patients admitted in the first instance for a surgical condition. Taking the average readings from the charts of patients admitted into this hospital with purulent bronchitis, we find the temperature is between 102° and 103°, the pulse 120 or over, and the respiration about 35. The patient frequently complains of shivering and looks pathetically miserable, but we have not seen an actual rigor. Despite his obvious shortness of breath, the sisters have noticed that, at any rate at first, he prefers a lateral position low down in the bed, and resents any attempt to prop him up.

Cough.—This for the first day or two may be irritable and distressing with a little frothy expectoration, but as the latter becomes more purulent the cough is less troublesome,

and soon the patient is expectorating easily and frequently until the latter stages are reached; when owing to increasing asphyxia the patient becomes more and more torpid, the cough subsides, and hardly any secretion is brought up. This failure becomes an added factor in bringing about a rapidly fatal termination.

Expectoration.—The sputum, with its yellowish-green purulent masses, is very characteristic, and may be one of the first indications of the serious nature of the illness the patient is suffering from. A fuller description follows in the bacteriological section.

Temperature.—The fever of this complaint does not follow any very constant type. In nearly all our cases the pyrexia was of sudden onset, and for the first few days was more or less sustained at about 103°. Later it conformed more to the swinging type with a range of several degrees. In a few cases a curious gradual ante-mortem drop has been observed. The accompanying charts demonstrate this point. (See Charts 1, 2, and 3.)

Pulse.—Tachycardia is a very constant feature throughout the illness. The rate is frequently well over 120, though the volume may remain surprisingly good until immediately before death.

Some degree of dyspnœa is always present, and is usually progressive, though towards the end in the fatal cases when the mental acuteness is dulled by the increasing asphyxia the patient is not distressed by its presence. In some cases there have been paroxysmal exacerbations of the breathlessness, accompanied by a state of panic, in which the patient struggles wildly and tries to get out of bed in order to obtain relief. Cyanosis is another prominent feature throughout the illness. At first it may not be more than duskiness, but in the later stages it becomes very evident. It is only slightly relieved by oxygen; this, no doubt, is partly explained by the difficulty in giving the oxygen efficiently owing to the patient's objection to any mouth-piece that fits at all tightly and partly by the blocked condition of the bronchioles interfering with the absorption of the oxygen.

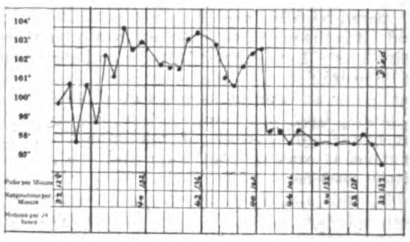
Physical Signs.

The condition usually begins with the presence of a moderate number of sharp crepitant râles, often first heard in the region of the root of the lung; these quickly become generalised. In the majority of the cases signs of broncho-pneumonic patches can be made out; these are generally situated near the root of the lungs. In a certain number of cases these patches spread and become confluent, giving practically all the physical signs of a lobar pneumonia. As the disease progresses the air entry is diminished; on listening one is often struck by the small volume of sound heard. The resonance of the lungs may also be lessened. A slight pleuritic rub was heard in a few of our cases, but this was soon masked by the bronchitic signs.

Treatment.

The treatment of this condition is not satisfactory. So far, in the worst cases, we have been unable to find anything that has any real influence on the course of the disease.

CHART 1 (Private M.).



Shows the temperature course in the more acute type of case. The temperature ends by crisis, but the pulse-rate remains high and the symptoms (cough, dyspnœa, &c.) persist. Death occurred in this case two days after the crisis. *Bacillus influenzæ* isolated in this case.

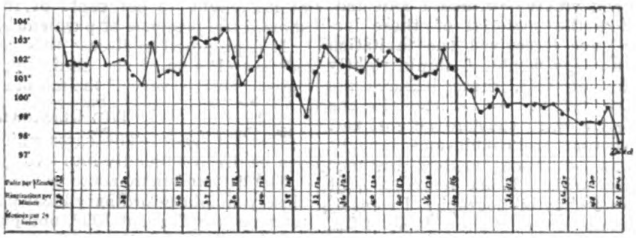
Inhalations of steam with eucalyptus, tinct. benzoin. co., &c., seemed to give considerable relief, and in order to make this as continuous as possible we have recently treated our more urgent cases in a steam tent with encouraging results. The cough is rendered less troublesome, and the expectoration being kept less tenacious is more easily expelled, a most important point, for once the patient ceases to bring up the purulent secretion he quickly goes downhill, becoming more and more cyanosed with right-sided failure of the heart.

The results obtained from oxygen are disappointing, the relief being slight and very transitory. We have already mentioned our explanation of this observation.

Venesection has likewise failed to benefit the patient for more than a very short time, though possibly we have not resorted to this treatment sufficiently early.

For drugs we have chiefly relied on digitalis and iodides with other expectorants. In the last stages, when the patient has ceased to expectorate, atropine given hypodermically has given temporary relief. Adrenalin has also assisted to prolong life. Pituitary extract increased the incontinence so many of our patients suffered from towards the end, and for this reason probably did more harm than good. Strychnine and camphor in oil were also tried, but without any marked benefit. A suitable vaccine may be shortly forthcoming, but up to the present we have not been able to give this line of treatment a fair trial.

CHART 2 (Private C.).

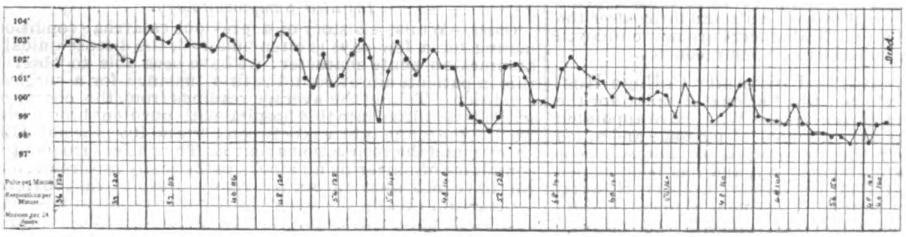


A less acute case than the preceding. Note the prolonged, rather swinging temperature and the fall by lysis without diminution of pulse-rate just before death. *Bacillus influenzæ* isolated.

2. BACTERIOLOGY.

Since the outbreak of the epidemic of purulent bronchitis with which this investigation is concerned 20 specimens of sputum have been submitted to the laboratory for bacteriological examination. These have all been taken from cases which in their clinical aspect differed from cases of ordinary bronchitis, and most of which presented many of the signs and symptoms described in another part of this paper. In 4 of the cases the sputum examination was supplemented by an examination of pus taken post mortem from one of the

CHART 3 (Private B.).



his shows a course similar to that of the preceding case but of longer duration. The ante-mortem fall of temperature is again very marked. A Gram-negative bacillus resembling *Bacillus influenzæ* present in large numbers in films, but *B. influenzæ* was not isolated.

smaller bronchi. In most of the fatal cases a histological examination of the lungs and other organs was made, while in 3 of them an unsuccessful attempt was made to obtain a growth from the enlarged bronchial glands. Certain animal experiments were also made in 3 of the cases; these will be described later.

Sputum Examination.

In each case, after noting the naked-eye appearance of the sputum, films were made and stained by Gram's method and a portion was afterwards plated out on blood-agar or trypsin-broth-legumin-agar.

Character of sputum.—This is in nearly every case markedly purulent. Usually no mucus is present, but in some cases the sputum is muco-purulent. The colour is yellow or greenish-yellow and the consistence thick. Usually it has a nummular character. No blood has been observed in any of the specimens submitted. There has been no appreciable odour.

Examination of films.—In all but three of the cases direct examination of films of the sputum showed the presence of more than one organism. In 18 of the 20 cases there was present a small Gram-negative cocco-bacillus, which was afterwards identified as the *Bacillus influenzæ*. This occurred as a rule in typical clumps consisting of large numbers of bacilli. The individual organisms appeared sometimes as minute elongated cocci, often arranged in pairs, and in other cases were less coccoid and more definitely bacillary. In 10 of the cases in which it was found it was the predominating organism, being present in some in enormous numbers. In 3 of the cases no other organisms could be seen in the films, but *B. influenzæ* was abundant.

Cultural examination.—The method employed was to remove a small piece of sputum by means of sterilised forceps from the sterile bottle in which it had been collected. The sputum was then thoroughly washed by shaking in sterile saline, and a piece of the washed sputum was plated out on blood-agar or trypsin-broth-legumin-agar. The latter, on account of its transparency and the relative ease with which *B. influenzæ* grows on it, gave the better results. In this way the influenza bacillus was isolated in 10 of the 18 cases in which an organism resembling it was seen in direct films.

In the investigation of the other organisms present many were diagnosed both from their morphological and cultural characters. But in some of the cases, owing to lack of time, the appearance of the organism as seen in direct films was alone noted. With this proviso it may be stated that in the cases here shown the following organisms other than *B. influenzæ* were found:—

	Cases.		Cases.
Pneumococcus	13	*M. tetragenus*	2
Streptococcus	5	A Gram-positive diplococcus	1
A Gram-negative diplococcus resembling *D. catarrhalis*	5	A large Gram-negative bacillus	1
Staphylococcus	3	*B. tuberculosis*	1

From the following table it will be seen that in most of the cases in which *B. influenzæ* was present in large numbers the pneumococcus also occurred.

Characters of the Bacillus Influenzæ Isolated.

The microscopical appearances are usually those of a minute, slightly elongated coccus with a tendency to grow in pairs end to end. Some longer and more definitely bacillary forms are also, as a rule, present. The organism stains somewhat slowly with ordinary stains and is always definitely Gram-negative.

On "trypagar" growth does not usually appear until 36 hours at least have elapsed. Very small translucent colonies can then be seen which have a convex surface and regular rounded edges. In primary cultures from sputum the influenza bacillus appears to grow more luxuriantly in the vicinity of colonies of other organisms. The colonies are very easily emulsified in water. Attempts at subculture on legumin-agar nearly always failed. On blood-agar growth appears within 24 hours in the form of small transparent colonies. The organism can be repeatedly subcultured on this medium, and though it ultimately tends to die out one strain has at the time of writing been kept going on it for over a month, subcultures being made about once a week. With ordinary agar, glycerine-agar, solidified blood serum, broth and gelatin no growth is obtained. Nor could the organism be cultivated anaerobically on any of the media used.

Table Showing that in Most of the Cases in which B. Influenzæ *was Present in Large Numbers the Pneumococcus also Occurred.*

Serial No.	Name. &c.	Examination of films.	Result of culture.	Other organisms present.	Death or recovery.	Remarks.
1	Pte. C.	+++	+	...	D	Case of bacillary dysentery with septic bronchitis.
2	Pte. H.	+	—	*D. catarrhalis.*	D	Had broncho-pneumonia, right pleural effusion and toxic nephritis.
3	Pte. K.	++	+	None.	D	Had broncho-pneumonia
4	Pte. M.	++	+	*D. catarrhalis.*	D	No pneumonia.
5	Pte. G.	++	—	Streptococcus. Pneumococcus. *D. catarrhalis.*	D	Broncho-pneumonia and toxic nephritis also.
6	Pte. C.	+++	+	Streptococcus. Pneumococcus. *D. catarrhalis.*	D	...
7	Pte. A.	+++	+	Pneumococcus (scanty).	D	Marked emaciation.
8	Pte. U.	+	+	Pneumococcus. *D. catarrhalis.* A Gram-positive diplococcus.	D	Widespread broncho-pneumonia.
9	Pte. G.	++	—	Pneumococcus. Numerous others.	R	...
10	Pte. W.	++	—	Many others.	R	...
11	Pte. W.	++	—	Pneumococcus. Streptococcus.	D	Broncho-pneumonia.
12	L/C. S.	++	—	Pneumococcus.	R	...
13	Pte. D.	—	—	Pneumococcus.	R	...
14	Pte. V.	++	—	*B. tuberculosis.* Staphylococcus. Pneumococcus.	D	Acute tubercular broncho-pneumonia.
15	Pte. H.	+++	+	Staphylococcus. Streptococcus. *M. tetragenus.*	D	Broncho-pneumonia and emphysema.
16	Rev. G.	—	—	Pneumococcus. Streptococcus. *M. tetragenus.*	R	...
17	Pte. T.	—	+	Pneumococcus.	R	...
18	L/C. H.	++	—	Pneumococcus.	D	Double lobar pneumonia.
19	Pte. F.	++	+	Pneumococcus. Large Gram-negative bacillus.	R	Lobar pneumonia.
20	Pte. C.	+++	+	None.	D	No pneumonia. Ante-mortem fall in temp.

Col. 3: +, *B. influenzæ* present in small numbers; ++, in moderate numbers; +++, in large numbers; —, not found.
Col. 4: +, *B. influenzæ* isolated; —, not isolated.

Animal experiments.—Two strains of the organism isolated were injected into mice intraperitoneally and into rabbits intravenously. In another case in which the *B. influenzæ* was present in the sputum in large numbers and was practically the only organism found, a suspension of the sputum in saline was similarly injected into a rabbit and a mouse. In all cases the animals survived and showed no signs of illness.

Vaccine therapy.—A vaccine was prepared from the organism isolated from one of the later cases, but by the time this was ready the epidemic was almost over, and up to the time of writing there has not been a suitable opportunity of using it. It is not, however, likely, if one may judge from the blocked state of the bronchioles, that vaccine therapy will be of any value except in the early stages.

3. MORBID ANATOMY.

The prevalence of bronchitis of a purulent type is seen from a study of 156 consecutive necropsies made during February and early March, 1917, in which it occurs as a primary condition in 45 and as a secondary condition in 26 of the cases examined. Altogether purulent bronchitis was found in 45·5 per cent. of the total cases. In the cases examined bronchitis is more than five times as numerous as lobar pneumonia, which is the other prominent pulmonary disease. Tuberculosis in the form of obsolete foci in lungs or glands was present in 8 of the total 71 cases. In the whole 156 cases tuberculosis was noted in 14. In none of the cases of bronchitis did tuberculosis appear to be active. It occurred in 3 which are regarded as primary, and in 5 secondary cases. It would appear not to bear any definite relation to the incidence of the condition.

Appearances which might be regarded as typical are as follows.

The face is more often than not cyanosed, and often a considerable degree of wasting is present, though in the more rapidly fatal cases this is not so apparent.

The lungs show three prominent features. They are almost always bulky on account of a great amount of emphysema which affects chiefly their anterior margins. The heart is often greatly obscured by bulky lung when the chest is opened.

Some degree of pleurisy is generally present; more often this is plastic in type, though occasionally small collections of fluid are found in the pleural cavities; clear yellow fluid was found in 8 of the cases examined, 5 of these being primary. In only 2 cases did the effusion exceed a few ounces; both of these were cases of primary bronchitis. Empyemata are not often found.

The third feature is the constant appearance of a thick yellowish pus in the bronchi. In the larger bronchi it is mixed with air, and often is discoloured by altered blood; but in the small tubes cut in section the pus exudes spontaneously as a rule, with little or no admixture of air. A lung cut in the ordinary way may show large numbers of small yellow points from which pus is exuding.

Considerable œdema is commonly associated with the above appearances, and a greater or less degree of collapse, generally at the vertebral borders of the lower lobes, was found in 15 of the cases examined.

A certain number of cases pass on to a condition of broncho-pneumonia, and when this occurs it usually shows itself in the form of small solid nodules, in the centre of which are pus-containing bronchioles. Consolidation has been first observed near to the roots of the lungs, and in a few has been so extensive as to simulate lobar pneumonia at the necropsy. Broncho-pneumonia was recorded in 32 of the 71 cases examined, of which 22 occurred in cases primary from the start.

In 34 of the cases of primary bronchitis lymphatic glands in the root of the lung, the bronchial group, and the tracheal glands were noted as greatly enlarged, and on section they were grey or pinkish-grey in colour. Not uncommonly the mesenteric and retroperitoneal and even inguinal and axillary glands were found affected.

The spleen in many cases was found engorged and not soft. On cutting the organ the corpuscles were often found to stand out prominently as if sharing in the disorder of the lymphatic glands.

Some degree of derangement of the kidneys was noted in 25 out of the 45 primary cases, taking the form of some swelling and pallor of the cortex. Often the kidneys had lost their firm consistence and were flabby and in a few cases soft. Engorgement, on the other hand, was noted in a few, generally accompanied by engorgement of the spleen. The liver very often showed evidence of fatty change.

The right side of the heart was almost always dilated and the myocardium commonly pale and friable. No evidence of endocarditis was found in any case. A few ounces of pericardial fluid, always pale yellow and clear, were found in 10 cases, but this was not associated with any roughening of the pericardium or cohesion of its surfaces. Broadly speaking, these findings fall into two groups. In one the organs are congested, the heart dilated, though fairly healthy, and the patient cyanosed; in the other the organs are flabby or soft, the heart muscle pale and friable, and the patient pallid. The first group corresponds with a suffocative and the second with a toxic death.

Histology.

An examination of portions of lung, bronchial gland, and kidney taken from eight of the fatal cases was made. The following is a summary of the histology of these organs.

Lungs.—The most striking changes are in the smaller bronchi. Their walls are thickened and the vessels engorged; the lining epithelium, which is at first intact, is later detached in parts from its basement membrane, and the epithelial cells can be seen lying free in the lumen. In a still more advanced stage the bronchiole is entirely denuded of mucous membrane, and its wall consists of granulation tissue which greatly diminishes its calibre. The bronchi are in the less advanced stages almost completely filled with pus, in which, in some cases, the influenza bacillus was found in appropriately stained sections. Later on columnar epithelial cells in small masses are mixed with the polymorphonuclear pus cells, and by the time the epithelium is entirely shed the amount of pus in the bronchus is greatly diminished. Many of the specimens show marked broncho-pneumonia, but in some there is no great extension of the inflammatory process to the surrounding lung tissue. Indeed, the small extent to which catarrhal pneumonia is often present in the vicinity of markedly involved bronchi would suggest that the pneumonia is due to a local toxic effect rather than to an infection of the corresponding area of lung tissue.

Bronchial glands.—There is extreme congestion and enlargement of lymph nodes. In one specimen one of the larger arteries was thrombosed, but no suppurative change was present in any of the cases.

Kidneys.—In almost all there is degenerative change in the tubular epithelium due to toxic action. This varies in degree, and in the most marked cases there is desquamation of epithelium, round-cell infiltration, and congestion, the condition being indistinguishable from an acute tubular nephritis.

CONCLUSIONS.

1. We are here dealing with an epidemic of a variety of purulent bronchitis.

2. For the following reasons we consider the cause of the disease to be the influenza bacillus: (*a*) The almost constant occurrence of this organism in the sputum; (*b*) its presence in the pus of the affected bronchioles; (*c*) in some typical cases it occurs apart from the presence of any other organism; (*d*) the outbreak of the disease in epidemic form at the time of year when influenza epidemics are most common and whilst one was actually in progress; (*e*) the marked signs of toxic poisoning which are found during life and post mortem.

3. There are well-marked clinical features which distinguish these cases from ordinary cases of bronchitis. The most prominent are the characteristic sputum, the extreme tachycardia, the cyanosis, the course of the temperature (notably the ante-mortem fall), and the extremely high mortality.

4. Treatment has so far been unsatisfactory. The most encouraging results have been obtained by use of a steam tent. Vaccines have not yet had a trial, but it is unlikely, in view of the blocked condition of the bronchioles, that they would be of great benefit.

5. The morbid anatomy consists of three groups of changes. (*a*) The lung condition: Marked purulent bronchitis, the smaller bronchi being filled with thick pus, from which air is notably absent. In some cases secondary broncho-pneumonia and œdema, pleurisy, and emphysema are common. (*b*) Evidence of toxæmia: Especially seen in kidneys, spleen, liver, lymphatic glands, and heart muscle. (*c*) Signs of right side heart failure and passive congestion. Some cases die of the toxæmia and others of the cardiac failure.

6. The histological changes are those of an acute purulent bronchitis affecting the smaller bronchi with or without some surrounding catarrhal pneumonia. Degenerative changes are seen in other organs, notably in the kidneys, where the appearances of a toxic nephritis may be found.

We are indebted to Colonel Sir John Rose Bradford, K.C.M.G., who originally pointed out to us the distinctive nature of these cases and who has given us much kind assistance throughout the investigation. Our thanks are also due to Professor J. H. Teacher, of Glasgow, for his kindness in preparing the photo-micrographs.

DESCRIPTIONS OF FIGS. 1 TO 6.

FIG. 1 (Case 7).—Marked congestion of bronchial wall with polymorph infiltration. Mucous membrane well preserved except at one part. Lumen almost completely filled with pus. No peri-bronchial pneumonia. (Same size as original.)

FIG. 2 (Case 7).—Part of the wall of a large bronchus showing congestion of submucosa, emigration of leucocytes through the swollen mucous membrane, and the purulent collection in the bronchial lumen. (× 120.

FIG. 3 (Case 4).—A moderately large bronchus with muscular and cartilaginous wall. There is free desquamation of epithelium which is seen lying among the pus in the lumen. The adjacent lung tissue (of which very little is here shown) is markedly congested, but not consolidated. (× 60.)

FIG. 4 (Case 6).—A bronchiole almost full of pus. Only here and there can the remains of mucous membrane be detected. There is a pneumonic condition in the surroundiug air vesicles, large pigmented catarrhal cells being present. (× 60.)

FIG. 5 (Case 6).—A high-power view of part of the preceding specimen. It shows the purulent bronchial contents, the remains of mucous membrane, and the surrounding catarrhal pneumonia. (× 120.)

FIG. 6 (Case 3).—A small bronchus showing a later stage than the other photographs. Epithelium completely shed and the mucn-thickened mass consisting entirely of young granulation tissue. Surrounding lung tissue congested, but no pneumonia present. (× 60.)

FIG. 1.

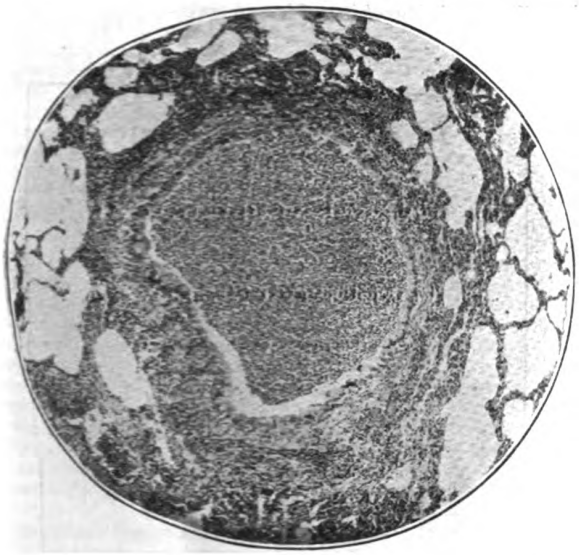


FIG. 2.

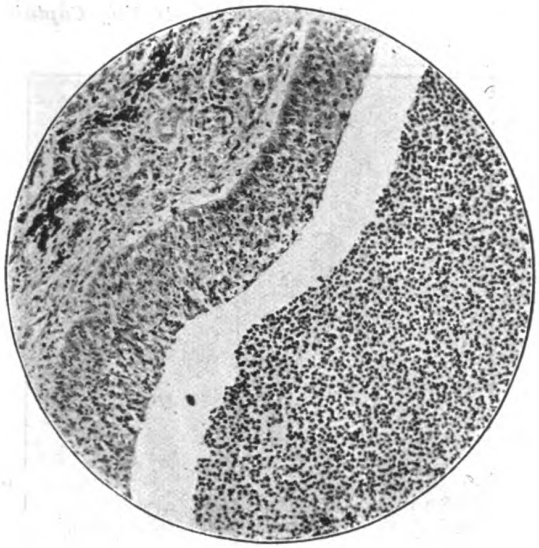


FIG. 3.



FIG. 4.

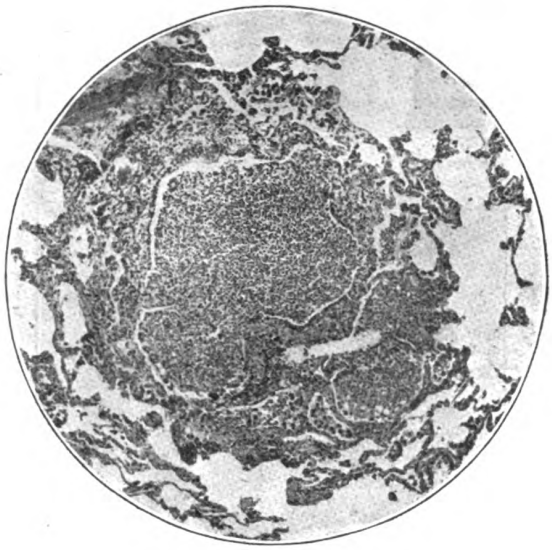


FIG. 5.

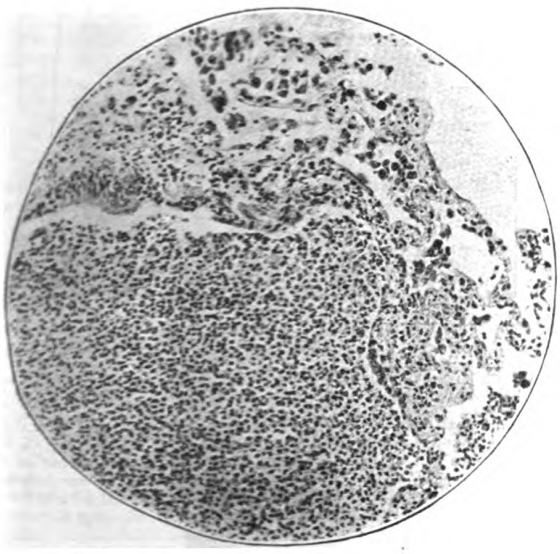
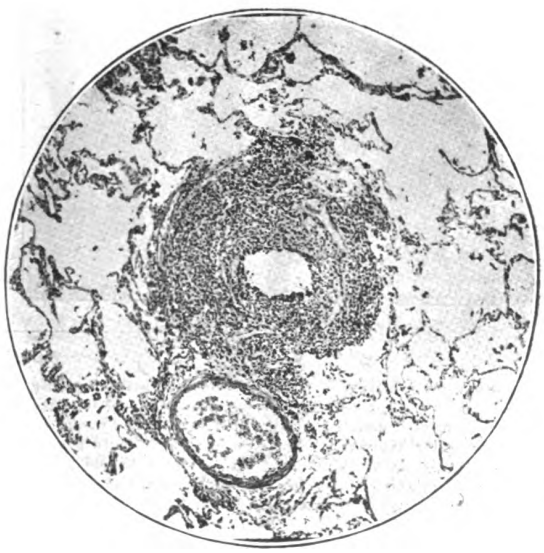


FIG. 6.



Skiagrams Illustrating Captain Pirie's Cases of Marching Fractures.

FIG. 1 (Case 1).



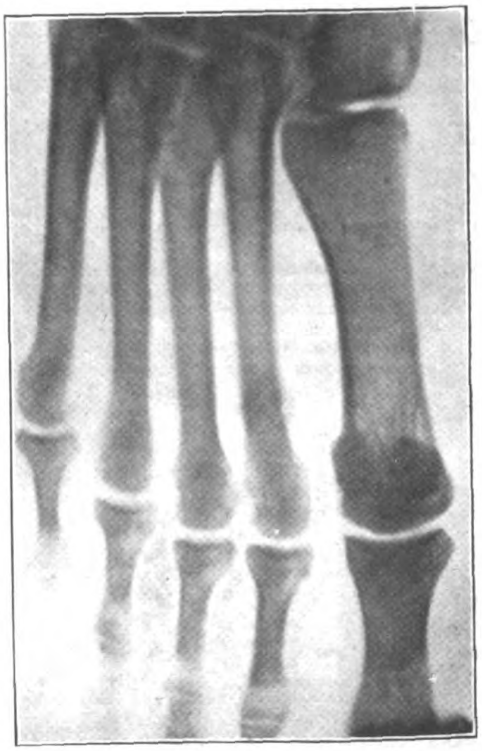
FIG. 2 (Case 2).



FIG. 3 (Case 3).



FIG. 4 (Case 4).



Descriptions of Cases.

CASE 1.—A. J. M., age 39. Unaccustomed to marching; began hard marches. Feet became very sore, specially after resting. Six weeks ago after a hard march the right foot swelled and was more painful than the left. He was not aware of a sudden acute pain like that caused by a bone breaking. The right foot continued painful for a month, but he carried on, going into the trenches and out again. After four weeks he had to give up. At the end of the sixth week he was X-rayed in our hospital, and there was shown to be fracture of the second right metatarsal bone near the head, surrounded by very abundant callus. (Fig. 1.)

CASE 2.—A. S., age 19. Marched for ten days with full pack, doing about 10 kilometres a day. While marching on the tenth day his feet were very sore and he felt a sudden acute pain. He carried on for nearly three weeks, at the end of which he was sent to our hospital, where an X ray was made, showing fracture of the second and third right metatarsals near the head, with abundant callus. (Fig. 2.)

MARCHING FRACTURES.

BY A. HOWARD PIRIE, B.SC., M.D. EDIN.,
CAPTAIN, C.A.M.C.

BY a "marching fracture" is meant fracture of a second third, or fourth metatarsal bone, or combination of these, in the right or left foot, caused by marching, and with no history of an accident.

This fracture comes under the class of fracture caused by muscular action combined with indirect violence, and is caused by severe prolonged marching.

My attention was called to it by two men coming the same day with the same kind of fracture of a metatarsal bone, and neither of them would admit an accident. The typical history is that after a long march, such as 29 kilometres in one day in full marching order or after 10 kilometres a day for ten days, the patient's feet become very sore, especially when standing up after resting. This indicates that the arch of the foot is giving way. The breaking of a metatarsal bone then takes place while marching. This seems to be Nature's method of making the man lie up, so that the arch of the foot may recover itself. The patient does not know when the fracture takes place, as his feet are already so sore from the acute flat-foot. After the fracture takes place he struggles on for a time, but has finally to fall out. He remains with his unit because most of the other men have sore feet too, and there is a stigma attached to a man who falls out because his feet are sore. A time comes—it has been usually about three weeks in our experience—when he has to give up and is sent to hospital.

The X ray photograph made three weeks after the fracture takes place shows a fractured metatarsal bone with abundant callus. One seldom sees so much callus formed in three weeks as occurs in these fractures. No doubt this is due to movement during walking with the fracture.

The exact cause of a marching fracture seems to be the following. In the normal foot the arch of the foot is so constructed that the bulk of the weight of the body is transmitted through the stout first metatarsal. The next strongest bone is the fifth metatarsal, which takes the next largest share in bearing the weight of the body. By referring to the skeleton one sees that the second metatarsal is the weakest bone, the third and fourth following it in order of strength.

When the arch falls down the weight of the body is distributed more equally to all the metatarsals, but the central ones being in more direct line with the astragalus get more than their share of the weight, and the second metatarsal being in direct line with the head of the astralagus gets the greatest proportion of the weight of the body. It receives more weight than it is constructed for, and under prolonged strain of long marching, when the soldier is carrying his full equipment, it gives way.

When a person stands on his toes on one foot, the greatest breaking strain is near the head of the metatarsal bones, and this is the position in which the fracture occurs most frequently. It probably occurs when the man rises on to the toes of one foot to make a forward step with the other foot.

In four of our cases the fracture occurred near the head and in two near the middle of the shaft.

This fracture must be fairly common during the long marches made by our men, as these six cases have come to my notice in a series of 13,000 X ray negatives.

FIG. 5 (Case 5).

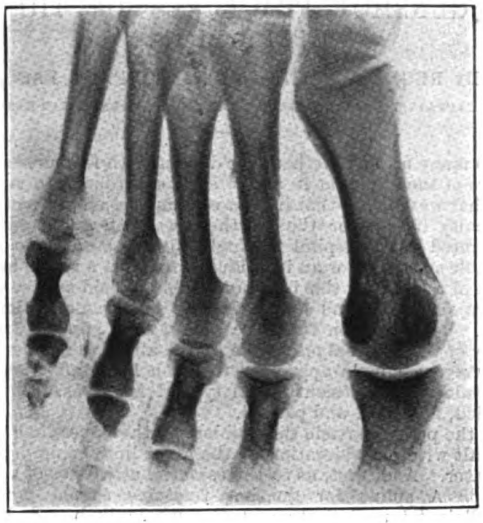


FIG. 6 (Case 6).



Descriptions of Cases (continued).

CASE 3.—H. T., age 29. After a march of 29 kilometres in one day his feet were very sore. Next morning his feet felt "as if they were going to burst." That day he marched 9 kilometres, and had to fall out from the pain in his feet. No history obtainable of any sudden breaking pain. He was flat-footed before joining the Army. About three weeks after the day he had to give up after marching 9 kilometres he came to our X ray department, and the X rays showed fracture of the third right metatarsal about its middle, with abundant callus formation. (Fig. 3.)

CASE 4.—C. O., age 30. While on a long march pain of acute kind came on in his left foot, and he had to fall out. He had no accident to cause the pain. He carried on for about three weeks, and the X ray photograph made five weeks after the time when the acute pain came on shows fracture of the second left metatarsal near its head. (Fig. 4.)

CASE 5.—T. N., age 34. During a long march, with full equipment, he felt severe pain in his left foot. No history of accident to it. He carried on with his unit for two weeks, and then had to give up. Three weeks after the severe pain the X ray photograph showed fracture of the third left metatarsal about its middle. (Fig. 5.)

CASE 6.—Pte. B., age 19½. Felt severe pain in foot during a long march. Came for X-rays three weeks later. X rays showed fracture of fourth right metatarsal near the head, with abundant callus. (Fig. 6.)

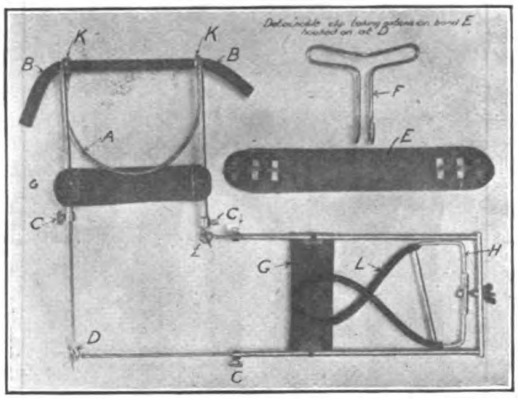
A UNIVERSAL EXTENSION-SPLINT FOR GUNSHOT FRACTURES OF THE UPPER LIMB.

BY REGINALD WILLIAMS, L.R.C.P. & S. EDIN.,
LATE CAPTAIN, R.A.M.C.; SURGICAL SPECIALIST, BARNET WAR HOSPITAL.

So many are the methods for dealing with fractures of the bones of the arm that it might seem superfluous to suggest another were it not that in that very multiplicity of method a difficulty lies. For though the specialist, particularly if appointed to a hospital in England, may be able to make suitable selection for an individual case from a varied assortment of apparatus, this is impracticable in field-service work, where simplicity and unification are of paramount importance. The question therefore arises, is it possible from a study of the cardinal principles of the already existing types to evolve a simple apparatus for each limb, affording not only adequate treatment for all typical fractures, but easily applied, adjusted, and packed.

In the present article the problem of the upper limb alone is dealt with, consideration of the lower limb being deferred till later. And, first, as to the essential attributes of such a splint. A splint for gunshot fractures should provide: 1. Efficient immobilisation of the whole limb. 2. Ready access to wounds without disturbance of immobilisation. 3. Adequate extension of the broken segments. 4. Maintenance of joints in a position of physiological rest or of maximum functional utility in view of possible subsequent stiffness and adhesions. 5. Distribution of pressure over as wide an area as possible to prevent pressure sores. 6. Lightness and adaptability for application to limb and also for transport. 7. A composition, such as rubber and galvanised metal, which can be easily cleaned and sterilised.

FIG. 1.

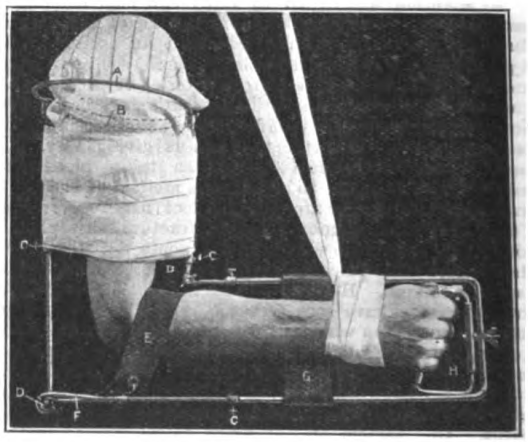


Description of Splint.

It is probably generally acknowledged that the only system which adequately combines immobilisation with access for dressings is some form of metal frame following the outline of the limb and affording support to the latter by means of slings.

Fig. 1 shows a splint of galvanised wire after the pattern of the cradle splint of Major E. Hey Groves, but differing essentially therefrom in that the wire framework does not pass under the axilla. The shoulder-piece (A) is hinged to the tubular framework in such a manner as to allow of its being swung into any position. It can thus be used for either arm and packed flat for transport. Through the hinges connecting the shoulder-piece to the frame a rubber tubular band passes under the axilla, firmly gripped by the said loops, but not too firmly to prevent adjustment. To the forward end of the splint is affixed an angled loop of wire (H) secured by a bolt which passes through the frame and forms a pivot about which the loop can turn, the bolt being provided with a winged nut by which it can be tightened at will and set at any desired angle of supination. In whatever way the wrist is fixed, as the hand-piece swivels on a transverse bar movements of flexion of the wrist are not prevented, nor are movements of the fingers interfered with. A flat elastic band (L) is passed under the wrist and crossed over the back of the hand, the hooked end being attached to the angled loop of wire (H). Accessory rubber slings (G G) are hooked on to the frame when necessary. The detachable T-shaped metal loop (F) is hooked on to the winged nut (D) at the lower angle, and the broad elastic band (E) is affixed below the elbow for fracture of the humerus (see Fig. 2) and behind the elbow for fractures of the lower arm, as shown in Fig. 4.

FIG. 2.



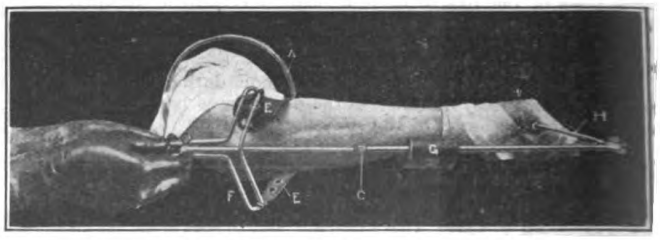
Universal splint applied to a case of fractured humerus.

Method of Application.

Fracture of humerus (Fig. 2).—One end of the axillary tube (B) having been withdrawn, the angled splint is laid over the fractured limb. Accessory rubber slings (G G) are placed in position; the tubular axillary band is replaced in the head-piece and drawn taut, thus fixing the splint at the shoulder. The wrist is next fixed to the hand-piece (H). The broad elastic band (E) is then passed over the forearm and fastened with the necessary degree of tension to the T-shaped metal loop (F). (See Fig. 3.) By this arrangement constriction of the soft parts and interference with the venous return are avoided. Traction being now applied, the fractured segments of bone are drawn asunder, the rubber tube in the axilla pulling upwards and the elastic band downwards.

As to final slinging and adjustment, the three cardinal points of the arm—viz., the shoulder, elbow, and wrist—having been immobilised, dressings are attached to the limb by bandages which encircle the arm and corresponding part of the splint, the removal of which in no way disturbs the adjustment of the fracture. When the patient is up a narrow sling passes round the wrist portion of the splir and supports it to the neck. The limb can be lifted int any position desirable for dressing and irrigation purpose as also for the prevention of fixation at the shoulder-join (See Figs. 2 and 3.)

FIG. 3.

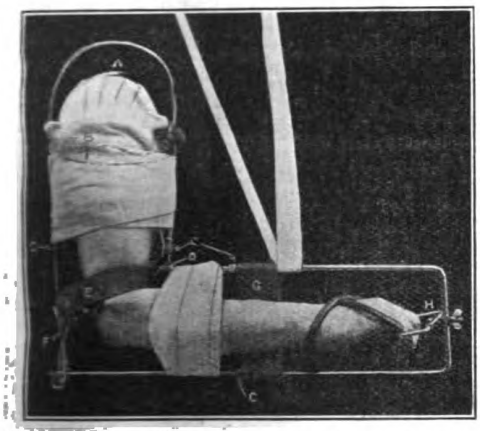


Fractured humerus put up as in Fig. 1, the limb being raised and abducted for dressing purposes.

Fracture of forearm.—The shoulder having been fixed, th rubber band (L) is attached to the hand-piece (H), which

fixed in any position desired by means of the T nut controlling the hand-piece. The rubber band (E) is passed above the elbow and attached to the T-shaped metal loop (F), now fixed in position behind the elbow. The T screws (C C) are loosened and the forward end of the splint is drawn out till sufficient tension on the broken segments is obtained. The screws are then fixed in this position. Fig. 4.)

FIG. 4.



Universal splint applied to a case of fractured forearm. The forearm is completely pronated.

Fracture in elbow region.—In Fig. 5 the T screws (C C C C) and the winged nuts (D D) (Fig. 1) have been loosened and the forearm portion of the splint has been straightened and fixed in position. The T-shaped attachable loop (F) has been removed and the rubber band (E) has been used as an accessory sling.

FIG. 5.



Universal splint applied to a case of fracture of the neighbourhood in the elbow-joint.

Advantages of the Splint.

The advantages of this splint are the following:—

1. Only one splint is required for any typical fracture of the upper limb.
2. A gradual, painless, and sufficient extension is effected.
3. It is the ideal splint for field dressing stations. Once affixed, it need never be removed, as the rubber bands can be detached and sterilised daily.
4. The weight of the splint, with attachments, is only 1¾ lb.
5. It can be packed flat or in sections. By the latter method it can be sent by post in a cardboard box 12 × 9 × 1 in.
6. The entire splint can be sterilised and can at any time be placed in an arm-bath.
7. The comfort of the patient is enormously increased and pain is practically eliminated.
8. The nurse's work is reduced to a minimum.

This splint is a combination of three splints designed and used by the writer at the Barnet War Hospital, and the results there obtained emboldened him to seek a wider field. They have been tried and approved by the following surgeons, whose encouragement the writer would here wish to acknowledge: Colonel A. Carless, Eastern Command; Major E. Hey Groves, Beaufort War Hospital; Surgeon-General N. R. Howse, C.B., V.C., Australian Forces; Captain E. C. Hughes and Sir W. Arbuthnot Lane, Bart., Millbank; Mr. D. Ligat, Middlesex Hospital; Mr. V. Warren Low, St. Mary's Hospital; Colonel T. H. Openshaw, C.M.G., London Hospital. Special indebtedness is due to Major Hey Groves for the inspiration of the work and assistance in preparing this article; to Lieutenant H. T. Booker, R.E., for the drawings; and to Lieutenant W. Daunt, R.A.M.C., High Barnet War Hospital, for experimenting with the earlier models.

ON THE TREATMENT OF

RECENT GUNSHOT WOUNDS WITH BISMUTH-IODOFORM-PARAFFIN PASTE.

WITH SPECIAL REFERENCE TO COMPOUND FRACTURES.

BY L. COLLEDGE, M.B. CANTAB., F.R.C.S. ENG., CAPTAIN, R.A.M.C. (T.F.);

AND

HAMILTON DRUMMOND, M.B. DURH., F.R.C.S. EDIN., CAPTAIN, R.A.M.C. (T.F.)

A LARGE number of cases have now been reported in which the bismuth-iodoform-paraffin paste (B.I.P.P.), introduced by Professor Rutherford Morison, has been employed with satisfactory results. These cases, however, have all been sent to England suppurating freely before this treatment was applied, and its use in recent wounds has not been reported. The writers wish to record their experience of the use of B.I.P.P. in recent wounds as encountered in a casualty clearing station and to advocate this method as a treatment for recently infected wounds in which suppuration is not yet fully established. They have been further encouraged by the report of Dr. Louisa Garrett Anderson and Dr. Helen Chambers on a large series of cases treated in England, for they say "the best results are obtained when B.I.P.P. treatment is applied soon after the man has been wounded." The danger of gas gangrene has deterred surgeons from employing the method at this early stage in wounds which are constantly infected with the various strains of organisms which produce gas gangrene. Fleming found in the bacteriological examination of 127 cases of wounds from one to seven days old *B. aerogenes capsulatus* (*B. perfringens*) in 103 cases, streptococci in 102 cases, staphylococci in 40 cases, *B. tetani* in 22 cases. He found also a variety of other organisms in 67 cases. In a series of 25 specimens, including missiles, fragments of clothing, pieces of excised skin and portions of resected muscle from wounds seen in this casualty clearing station within 24 hours of the receipt of the injury, the following organisms were found by Captain J. W. McNee and Captain J. S. Dunn in films and cultures: in 23 cases large bacilli of perfringens type; in 9 cases streptococci; in 1 case *Staphylococcus aureus*; in 1 case Gram-negative bacilli. In only one instance in which some fragments of cloth from a wound were examined by films and cultures was the result negative.

Advantages of Method and Technique.

The method rightly used has the following advantages:—

1. The wound can be closed by sutures, rendering prolonged drainage unnecessary, and in the great majority of cases there is no suppuration.
2. No change of dressings is required and much disturbance of the patient is avoided—a most important matter to freshly wounded men to whom rest is essential.
3. It greatly increases the facility and reduces the discomfort of transport. Apart from wounds of the viscera and central nervous system, the management of compound fractures presents the most difficult problem for the surgeon in a casualty clearing station, and it is in this class of cases that the writers have found the method particularly valuable.
4. There is no increased liability to the development of gas gangrene. On the contrary, it is diminished.

Technique.—The patients usually arrive in a filthy condition, encrusted with mud. The skin around the wounds, for now they are usually multiple shell, bomb, or grenade wounds, is cleaned with ether soap and rendered as surgically clean as possible. The part is surrounded with dry sterilised towels. Surrounding the entry and exit wounds there is always a margin of necrotic skin heavily infected with micro-organisms. This is removed by excising a ring of skin one-eighth of an inch wide. The wound is then freely opened up and all foreign bodies and loose pieces of bone are as far as possible removed. Further, all devitalised muscle is resected and bleeding points are secured with Spencer-Wells artery forceps. This resection extends not only to muscle which is obviously necrotic, but also to areas which are devascularised and non-contractile. It is in muscle in this condition that gas gangrene begins to spread. Although this procedure is most important, the writers have had long enough experience to know that in itself it is insufficient to prevent the subsequent development of obvious signs of infection in compound fractures. The raw surface

is then well swabbed with methylated spirit, and the B.I.P.P., consisting of 2 parts of iodoform to 1 of bismuth subnitrate with sufficient liquid paraffin to produce the consistency of Devonshire cream, is smeared all over the wound and the ends of bone with a piece of dry gauze. It should be well rubbed in to form a thin film on the surface, and care should be taken not to leave any excess. It is convenient to leave the ligaturing of bleeding points until this stage, as otherwise the ligatures are apt to be rubbed off. Gaps in muscle can be brought together with catgut stitches when necessary. The wound is then sewn up with interrupted fishing-gut sutures and a dressing of dry sterilised gauze is applied; this is covered with wool, and, if required, a splint is applied. In a favourable case the dressing need not be disturbed until the patient is evacuated to the base, as it is an invariable rule to examine the wound before the patient leaves. If the outer dressing becomes stained with discharge it should be changed without disturbing the gauze in contact with the wound. If the patient has to be evacuated immediately to the base it is advisable to insert the fishing-gut stitches, but to leave them untied or only loosely tied. They can then be tightened later on without fear of tension being caused in the wound by retained discharge. This applies particularly to very extensive wounds.

It will be observed that the writers have differed from the technique described by Professor Rutherford Morison in the free excision of damaged tissues, the reason being the liability to the development of gas gangrene in recent wounds containing devitalised muscle. Such muscle is highly dangerous and permanently functionless; consequently, no further damage is done by resecting it. Moreover, the belly of the individual muscle is frequently torn across, so that the muscle as an organ is rendered useless, unless it be sutured with catgut, which this technique renders possible.

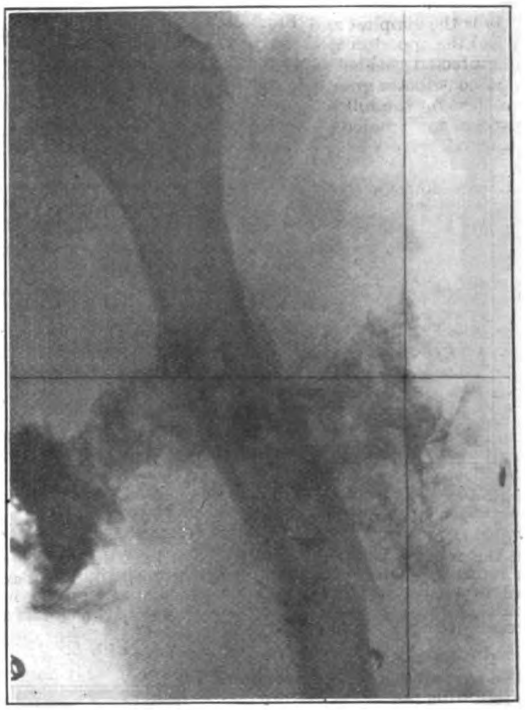
Results of Treatment.

As a rule there is a general reaction following this procedure lasting from 24 to 48 hours. This is shown by an elevation of the temperature and pulse-rate. This soon subsides and there are no other alarming symptoms, so that the surgeon must not be deterred and tempted to examine the wound. Should, however, the wound be examined, it will be found in a favourable case that the edges present the signs of a mild inflammatory reaction, the evidences of which have disappeared by the third or fourth day. There is a discharge consisting of serum mixed with the products of decomposing B.I.P.P. It is not foul, but smells strongly of iodoform. The amount is roughly proportional to the area of the raw surface involved. Should the case not be progressing well, the general appearance of the patient is most suggestive, and there is pain and tenderness in the part affected, and when examined it is red and swollen. The temperature and pulse-rate remain high. This has only happened in two cases, one a shell wound of the thigh, the other a grenade wound of the wrist, neither of them being compound fractures. The symptoms and signs were unmistakable the day following the operation in each case; both cases recovered after opening up and draining the wounds freely. The failure was probably to be attributed to insufficient resection of damaged tissues. So far there have been no cases presenting signs of iodoform or bismuth poisoning, but care has been taken not to use an excessive quantity of B.I.P.P. nor to leave any lumps in the wounds.

The writers have used this method since September, 1916, but not continuously. A large number of compound fractures have come under their observation since that date which have been treated by various methods; but as they have found this method gives the most satisfactory results, they now use it exclusively in all compound fractures. They have found it valuable also where amputation has to be performed on account of severe laceration of the tissues; in such cases the stump almost invariably suppurates otherwise.

Illustrative cases.—The following short notes of five typical cases illustrate its use in compound fractures:—

CASE 1. *Compound fracture of left femur.*—Lance-Corporal W., wounded by a shell fragment at 10 P.M. on Feb. 17th, 1917. The entry wound was over the anterior aspect of the thigh at the level of the junction of the middle with the lower third, size of a two-shilling piece. The exit wound at the same level was 4 inches in length, situated at the back of the limb. Operation 12 hours later. The wound was freely opened up in front and non-contractile muscle and many fragments of loose bone were removed. The same was carried out through the posterior exit wound. The biceps muscle which had been completely divided across showed much laceration. The wound was well dried out with methylated spirit and B.I.P.P. applied. The muscles were brought into apposition with catgut sutures and the skin with silkworm gut. The patient made a straightforward recovery and went to the base on the seventeenth day after operation. The temperature on one occasion (fourth day) reached 102° F., after which time it came down to normal. The anterior wound was healed, and posteriorly, except for a sinus leading down to a bare area of bone, the wound was healing well. Bacteriological examination showed exudate from this wound containing streptococci and staphylococci.



Radiogram of Case 5, showing the appearance of the fracture after being treated with B.I.P.P.

CASE 2. *Machine gun bullet wound of right radius.*—Corporal B. was admitted to hospital at 2 A.M. on Feb. 28th with a wound of the right arm. The missile had entered just below the head of the radius and passed out at a point on the same level over the inner aspect of the limb. The forearm was very swollen and tender, and there was no pulse at the wrist. Operation 11 hours after injury. On laying open the wound the radial artery was found divided close to its origin; both ends of the vessel were ligatured and several fragments of bone which were completely detached were removed. The radius showed much comminution just below the head of the bone. Wound dried out with methylated spirit, gauze and the B.I.P.P. applied The wounds were entirely closed without a drain. The patient left on the seventh day after the operation when he was dressed for the first time. Both wounds were healed by first intention. He was transferred to England on the fifteenth day after the operation quite healed and with the sutures removed.

CASE 3. *Rifle grenade wound of right radius.*—Private M., admitted to hospital on March 8th at 6 P.M. He had been wounded six hours previously. There was an entry wound in the outer aspect of the right forearm the size of a sixpence. The exit wound, which was larger and showed more destruction of the skin, was on the same level and on the inner aspect of the limb. Operation eight hours after injury. Both wounds were freely laid open and several fragments of bone were removed; the shaft of the radius, however, was not completely broken across After following the usual technique the wound was completely closed in layers. The usual general reaction followed and patient left with a normal temperature and pulse on the fifth day. The entry wound was healed by first intention and the exit wound showed a small amount of blood-stained serum from one point, otherwise it was healed.

CASE 4. *Compound fracture of femur.*—Private, admitted on March 3rd suffering from a scalp wound and a compound fracture in the lower third of the right femur, due to shell wounds. Operation 12 hours after injury. The scalp wound was excised and sutured; this healed by first intention and the stitches were removed on the sixth day. The thigh wound was freely opened up and all foreign bodies were removed. Skin and torn muscle were excised. The raw surface was treated with B.I.P.P. and the wound sewn up. A Wallace splint with plaster extension was applied. The patient was evacuated to the base on March 12th, the wound being quite healthy, and Colonel Cuthbert Wallace, A.M.S., informed us on April 1st that he had recently seen the patient in a satisfactory condition in a base hospital.

CASE 5. *Compound fracture of humerus.*—Private, admitted March 22nd suffering from shrapnel wound causing compound fracture of surgical neck of left humerus. Operation 12 hours after the receipt of injury. A shrapnel ball was removed from the axilla by new incision. This was treated with B.I.P.P. and sutured. The wound of entry was excised and all dead tissue was cut away. The raw surface and bone ends were treated with spirit and B.I.P.P. in the usual way and the wound sewn up. Patient was sent to the base on March 26th. There was then no sign of any suppuration in the wound when it was redressed with gauze and spirit.

Conclusions.

1. The method is applicable to recent as well as to wounds several days old.

2. There is no increased liability to gas gangrene if care be taken to eliminate that danger by free incision of damaged tissue.

3. It is the simplest and most reliable method the writers have had the opportunity of employing of avoiding suppuration in infected gunshot wounds.

4. It contributes greatly to the comfort and well-being of the patient for the following reasons: (*a*) wet dressings and irrigations are avoided; (*b*) as the dressings need seldom be changed there is a minimum disturbance of the injured part.

References.—Rutherford Morison: THE LANCET, August 12th, 1916, p. 288. Louisa Garrett Anderson and Helen Chambers: THE LANCET, March 3rd, 1917, p. 331. Alexander Fleming: THE LANCET, Sept. 18th, 1915, p. 638.

THE HÆMOGLOBIN VALUE OF THE BLOOD IN SURGICAL SHOCK.

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AND
H. B. BULLEN, B.A. CANTAB.

IN a Memorandum recently issued by the Medical Research Committee (published in THE LANCET of March 31st) evidence is brought forward that shock, experimentally produced in animals, is usually accompanied by a considerable loss of plasma from the blood into the tissues. The loss of plasma not only diminishes the volume of the circulating blood but also renders it more concentrated, and the increased concentration is manifested by a rise in the *percentage* hæmoglobin value of the blood. The Memorandum also contains a reference to observations made in France by Captain Marshall, R.A.M.C., which support the view that loss of plasma into the tissues is an important factor in surgical shock *in man*.

Surgical shock in man, however, is frequently associated with considerable hæmorrhage; and, as is well known, the normal reaction of the body to hæmorrhage is the rapid absorption of fluid from the tissues into the blood. By this means the volume of the blood is more or less completely restored to its former level, although the blood becomes more dilute and its percentage hæmoglobin value is lowered. It seems probable that in a patient suffering from both shock and hæmorrhage the percentage hæmoglobin value of the blood represents the outcome of two opposing processes—namely, shock which tends to concentrate the blood and hæmorrhage which leads to dilution of the blood. Determination of the percentage hæmoglobin value in such a case ought to show which of these processes is predominant; a low hæmoglobin value may be regarded as indicating that the patient is spontaneously increasing the volume of his blood at the expense of his tissue fluids, whereas if the hæmoglobin value is approximately normal the physiological reaction to loss of blood is being counteracted by the tendency of shock to concentrate the blood.

We have recently had the opportunity of determining the hæmoglobin value of the blood in several cases of shock. The patients were injured almost simultaneously, and were admitted a few minutes later to St. Bartholomew's Hospital. Three hours later, when the hæmoglobin value of their blood was determined, four of the patients had lost a considerable amount of blood, and in three cases the hæmorrhage was not completely checked; all the patients showed well-marked clinical signs of shock. The nature of the injuries and the observations made on the blood are summarised in the table.

The hæmoglobin determinations in Cases 1–4 make it clear that the patients who recovered reacted to hæmorrhage by absorbing fluid from their tissues into the blood, and thereby restored the volume of the circulating blood. On the contrary, this compensatory process failed to take place in the patients who died from shock. Further, in Case 5, who had no hæmorrhage, the hæmoglobin value rose considerably above the normal figure. These cases are too few in number to justify any dogmatic statement as to the prognostic significance of the hæmoglobin value of the blood in surgical shock. It seems legitimate, however, to point out, first, that they entirely support the view that loss of plasma from the blood into the tissues is an important factor in shock; and, secondly, that they have a direct practical bearing.

The obvious inference from these observations is that, in shock accompanied by hæmorrhage, a normal or approximately normal hæmoglobin value indicates that the patient is unable to make up for the loss of blood by absorbing fluid from his tissues. In these circumstances the volume of his blood becomes inadequate for the carrying on of the circulation, and the intravenous injection of saline solution (preferably a hypertonic solution) is desirable at the earliest possible moment.

No. of case.	Man or boy.	Age.	Nature of injury, &c.	Hæmoglobin examination on same day.*		Result.
				3 P.M.	6 P.M.	
1	M	30	Compound fracture of tibia and fibula of both legs. Wound of right knee, involving the joint. Considerable loss of blood. Right leg amputated at seat of election 2.30 P.M. Hb sample taken immediately after the operation.	67	—	Recovered.
2	M	—	Both feet shattered; severe hæmorrhage. Both feet amputated approx. 4 P.M.	87	95	Died from shock 40 hours after injury.
3	M	—	Compound fracture of right ankle and considerable hæmorrhage. Superficial burns of arm and trunk. Amputation at seat of election at approx. 5 P.M.	92	—	Died from shock within 12 hours after injury.
4	B	17	Compound fracture of left tibia and fibula. Fracture of base of skull. Moderate hæmorrhage. No major operation performed.	62	—	Recovered.
5	M	—	Very severe deep burn of right leg and side; tissues charred to a depth of 1 in. Popliteal nerve exposed and partly burnt. No hæmorrhage.	108	94	Recovered.

* In each case the injuries were received at 11.40–11.50 A.M.

At the time of the first hæmoglobin estimation none of these patients, except Case 1, had received saline injections; Case 1 had 1 pint saline per rectum between 2.30 P.M. and 3 P.M. Between 3 P.M. and 6 P.M. Case 5 drank several pints of fluid.

A DEVICE FOR INSURING SPONTANEOUS SEPARATION OF BLOOD CLOT FROM THE WALLS OF THE CONTAINING VESSEL.

BY A. D. GARDNER, M.D. OXON., F.R.C.S. ENG.

(*From the Department of Pathology, University of Oxford Standards Laboratory under the Medical Research Committee.*)

ONE of the chief difficulties that I, doubtless in common with many other workers, have experienced in the obtaining of serum from blood is the frequent refusal of clot to separate from the walls of the containing tube or cylinder. Many pathologists, it seems, have never been troubled by this difficulty; others, however, have. For instance, Lord Lister, as quoted by Sir W. Watson Cheyne,[1] observed that if blood be drawn aseptically into a glass vessel sterilised by heat the clot which forms does not contract and squeeze out serum. But, on the other hand, in reply to this quotation, Wright states that[2] "the whole of the serum industry depends on the fact that blood when drawn into a vessel which has been sterilised by heat *does* contract and squeeze out serum."

Thus we have apparently a disagreement between two very eminent observers upon one of the commonest laboratory phenomena. Lister's unqualified statement would meet with little support from workers who have had any consider-

[1] British Journal of Surgery, 1916.
[2] THE LANCET, Sept. 16th, 1916, p. 507.

able experience of serology, for blood clot is at least quite frequently found to separate and contract properly in glass vessels sterilised by heat. On the other hand, Wright's statement, which suggests that there are few or no exceptions to the rule that such clot does separate and contract, is not in agreement with my own experience. Dudgeon, Corbett, and Bawtree,[3] in describing the preparation of human serum, say that separation of clot and expression of serum take place in a few hours in sterile glass vessels. They mention no exception to this rule. I may observe in this connexion that my own experience of serological work at St. Thomas's Hospital was in full agreement with their observation, for I can hardly remember a single case of failure of separation while I was working there. In my present laboratory, on the other hand, about five out of every six specimens of human or animal blood fail to separate and contract in a satisfactory manner after coagulation. It makes no difference whether the glass vessels are finally washed with distilled or with tapwater before dry sterilisation; and I have been quite unable to find any reason for the difference. Professor G. Dreyer has suggested that it may be due to the fact that the blood specimens in this laboratory come, in a great majority of cases, from inoculated men and animals, while those that I remember at St. Thomas's were nearly all from normal individuals.

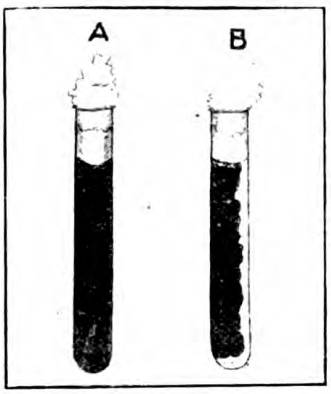
When a specimen of blood has been allowed to coagulate and the clot has been left to contract, but no satisfactory contraction has taken place, then it becomes necessary to use some sort of force to separate the clot from the walls of the vessel to which it remains adherent. But the use of force, entailing as it does the introduction of a glass or metal rod into the vessel, is objectionable. For it is impossible to separate the clot thus without breaking it to a certain extent and liberating a sufficient quantity of hæmoglobin to cause some pink or red colouration of the serum. Moreover, the opening of the vessel for this manipulation affords an extra chance that the serum may become spoiled by bacterial contamination.

These considerations, combined with the vexatious delay in the preparation of serum that results from a failure of clot separation, make it desirable to adopt some procedure which may insure the automatic separation and proper contraction of the clot and render mechanical interference unnecessary. The following simple method which was devised for the purpose has given uniformly satisfactory results over a period of six months.

Method.

Into the tubes or cylinders which are to receive the blood a small quantity of melted saline agar is poured. For an ordinary test-tube 1·0 c.c. is ample. The agar is a 1½ per cent. solution in 0·85 per cent. NaCl solution. No alkali is added. The tubes are then plugged and sterilised in the autoclave. Shortly before the tubes are to be used the agar is melted by immersing the lower end of the tube in boiling water and the melted agar is allowed to run up the walls of the tube, so as to coat them with a thin film. The excess of agar may be allowed to run back to the bottom of the tube or, if it be considerable, it may be poured away after removal of the plug.

Either the whole of the inner surface of the tube may thus be coated or there may be left uncoated a longitudinal strip, running from the mouth of the tube down some three-quarters of its length and having a width of about one-third of the circumference of the tube. In the former case the whole clot will detach itself from the glass, and either sink to the bottom or remain suspended by delicate attachments at its upper pole. In the latter case the clot will almost always adhere firmly to the uncoated strip of glass while separating everywhere else. The serum which separates out is practically always free from any visible trace of hæmoglobin, and it may be left in contact with the clot for several days without acquiring a pink tinge. The coagulation of the blood appears to be slightly delayed by contact with agar, and the quantity of serum obtained in a given time is usually rather less than in the case of a perfect automatic separation from a plain glass surface. But both these disadvantages, in themselves not important, may, if desired, be counteracted by placing the tubes in the incubator at 37° C. for one or two hours after collection of the blood. If this has been performed aseptically the high temperature will do no harm. Once coagulation has taken place separation and contraction occur with striking rapidity. The action of the agar film appears to be purely mechanical. The clot adheres firmly to the film and the serum which first exudes from the clot filters through the film or passes through cracks in it and separates the film from the wall of the tube. The adhesion of the agar to the clot is often clearly to be seen at the lower pole of the clot when a plug of agar has been left at the bottom of the tube; for the plug can be seen capping the lower pole of the clot and drawn up by it away from the floor of the tube. The appended drawing shows the results of allowing two portions of the same specimen of blood to clot (A) in an ordinary sterile glass tube, (B) in an agar film tube. The drawing was made after 24 hours. The control tube shows a complete absence of separation of the clot, while the agar film tube shows a separated and well-concentrated clot adherent to a part of the tube that has been intentionally left uncoated.



The question arises whether the serum is in any way affected by contact with the agar film. I can only say that experience has not led me to suspect any deleterious effect of the agar film on agglutinating serum. I have found by experiment that there is no determinable difference between the agglutinin titres of two specimens of the same blood when the one has clotted in an agar-lined tube and the other in a plain glass tube. But this is a point which would need to be taken more carefully into consideration when using this method in the production of therapeutic sera.

Gelatin has a very similar effect upon the separation of blood clot. In fact, it is in some respects better than agar. For instance, gelatin-lined tubes do not so often show an untidy "shreddy" clot as do agar tubes and the coagulation and separation are usually more rapid. But gelatin has the disadvantage of a low melting-point, which makes it a less convenient substance to deal with in hot weather and forbids the incubation of tubes, should this be desired. Moreover, there is at least a theoretical possibility that some digestion of the gelatin by tryptic ferments in the serum may occasionally take place. These considerations have led me to adopt agar in preference to gelatin for routine work.

Experiment to show the Percentages of Serum Obtained after 48 Hours, without Manipulation, from Ox Blood in Variously Treated Tubes.

—	Percent. by vol. of serum obtained. Total.	Percent. by vol. of serum from each of 4 tubes	—	Percent. by vol. of serum obtained. Total.	Percent. by vol. of serum from each
Saline agar tubes.	36·7	34·1 37·5 32·6 38·0	1% peptone gelatin tubes.	40·0	37·5 39·6 38·6 40·5
1% peptone agar tubes.	38·0	37·2 36·9 39·1 38·6	Nutrient gelatin tubes.	38·4	37· 38· 38· 39·
Nutrient agar tubes.	37·0	36·9 36·0 36·0 39·1			
Saline gelatin tubes.	40·0	41·3 39·6 38·6 40·5	Plain glass tubes.	20·6	37· 25· 2· *19·

* The clot in this tube had hardly separated at all; it was mechanically separated half an hour before the test.

The above table shows the quantities per cent. of serum obtained (without manipulation) from ox-blood which had been allowed to coagulate in a number of tubes treated in various ways. A glance will show that the quantity obtainable from tubes treated with three different kinds of agar and three different kinds of gelatin are very similar one to another, and that there is a considerable de-

[3] THE LANCET, August 19th, 1916, p. 315.

of uniformity in the percentages from the individual tubes. On the contrary, from the plain glass tubes a much smaller total percentage of serum was obtained (and this would have been even more striking had not the clot in one of these tubes been separated by manipulation about half an hour before the serum was drawn off). Moreover, the great irregularity of the percentages from the individual tubes—ranging from 37·2 per cent. to 2·2 per cent.—is in clear contrast to the uniformity secured by the agar or gelatin film.

Summary.

The spontaneous separation of blood-clot in glass vessels, and a uniform yield of serum, may be insured by coating the inner surface of the vessel with a thin film of agar or gelatin. For general purposes agar is to be preferred.

A SEBACEOUS HORN.

BY OSWALD VEVERS, M.R.C.S., L.R.C.P. LOND.,
ACTING MEDICAL SUPERINTENDENT, LAVERSTOCK HOUSE ASYLUM.

AN uncommonly well-developed sebaceous horn, the length being 4¼ in., the diameter at base ¾ in., is shown in the accompanying photograph. The spiral shape, site, and general appearance produced a striking resemblance to a ram's horn. The patient, a married woman, was admitted to Bucks County Asylum, suffering from delusional insanity, in September, 1916. During the daytime she was wont to conceal as much of the growth as possible by means of tufts of false hair, from which the free end of the horn protruded in a disturbing manner. The tip was freely movable through about two inches, without causing pain, the whole horn



Photograph showing the sebaceous horn.

moving *en masse* and being inalterable in form by even very considerable force. On grasping the base firmly movement could be elicited over the subjacent frontal bone, but the scalp here was not so freely movable as usual. Mr. L. W. Reynolds, of High Wycombe, informs me that he removed a similar growth from the patient's scalp eleven years ago, and that it "recurred a year later and then broke off," and continues, "whether it is associated with mental disease I cannot say, but the picture in Treves's book has a somewhat demented look about it." It would be interesting to know if any connexion has been traced.

I wish to express my thanks to the medical superintendent, Dr. H. Kerr, for permission to publish the case, and also to Mr. Reynolds, the patient's medical adviser.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

"CHEVALIER" MALT FLOUR.

(TUCKERS AND BLAKES, LIMITED, ASHLEY-ROAD MALTINGS, BRISTOL.)

THE analysis of this flour was as follows:—Moisture, 10·20 per cent.; maltose, 25·21 per cent.; dextrin, 13·04 per cent.; starch, 31·2 per cent.; protein, 15·75 per cent. (nitrogen = 2·50 per cent.); fat, 1·60 per cent.; mineral matter, 3·00 per cent. (containing 0·80 phosphoric acid). It will be seen that the diastasic process has been well carried out, the starch being largely converted into soluble dextrin and maltose. The flour still showed some diastasic activity. The reaction for enzymes was well marked. The flour was practically free from irritating husk. It has a pleasant malty flavour, and there can be little doubt of its nutritive value and easy assimilability. It mixes with milk very well, forming with it a sustaining and palatable liquid food, suitable for invalid and infant requirements.

CHLOROGEN.

(ARTHUR HYAMS AND CO., LIMITED, 10, ESSEX-STREET, STRAND, LONDON, W.C.)

Chlorogen is described as a water-sterilising solution containing di-basic hypochlorite prepared by Nesfield's process, and is intended for both military and civil use. It is a colourless fluid with chlorous odour. It is decidedly alkaline to litmus paper, the colouring matter of which it rapidly bleaches. On adding a solution of potassic iodide to chlorogen iodine is at once liberated. It is practically free from lime, but contains sodium salts. A marked chlorous odour is developed when it is added to water, 1 drop of chlorogen in 1 gallon being stated to give 1 part of chlorine in 1,280,000 parts. The powerful bactericidal action of chlorine so developed is familiar to all. The chlorine equivalent of chlorogen is well preserved.

COCOA AND MILK POWDER (SWEETENED).

(CADBURY, BOURNVILLE.)

This powder affords a very ready means of preparing a sustaining and nourishing beverage according to the manner directed. We found, as evidence of milk powder being present, 10·28 per cent. of milk sugar. The total amount of materials soluble in cold water was 72·5 per cent., which consisted largely of cane sugar. The total fat amounted to 12 per cent., the mineral matter to 2·50 per cent., nitrogen to 2·12 per cent., and moisture to 1·60 per cent. The flavour is attractive, being partly due to the full cream milk powder employed and partly to the cocoa, but, of course, the powder is decidedly sweet, owing to the cane sugar present.

LIQUOR UNOLINE.

(W. E. LOWE AND CO., LIMITED, 8, STAFFORD-STREET, OLD BOND-STREET, LONDON, W.)

This fluid has been prepared in accordance with a suggestion made by the late Sir Lauder Brunton some years ago that the mineral matters obtained by incinerating willow charcoal might give a more effective salt for medicinal purposes than when the ordinary potassium salts are employed. The salts in the willow charcoal are converted into nitrate by treating their solution with calcium nitrate, when presumably calcium carbonate is thrown out. The preparation has been credited with giving good results in rheumatism and neuritis, and particularly in arterio-sclerosis. On evaporating the "liquor" to dryness we obtained a clean crystalline residue made up chiefly of potassium nitrate, one-half fluid ounce (the usual dose) containing approximately 1 gramme of the salt.

TABLOID HALAZONE (0·004 GRAMME).

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

Halazone is a chloramine derivative associated with a sulphonic and a benzoic group—*p.* sulphon-dichloro-amino-benzoic acid. It was recommended in a recent report to the Medical Research Committee as a most

efficient disinfectant for drinking water. The tabloid halazone dissolves readily in water and develops a chlorous odour. The solution is alkaline and shows marked bleaching properties and easily sets free iodine from potassium iodide solutions. It leaves no unpleasant taste in the water and each tabloid is sufficient to sterilise a litre of ordinary water, but when the water is suspicious the addition of two is recommended, and contact should be allowed to take place for 40 minutes before the water is consumed.

(1) "PATENT" GROATS; (2) "PATENT" BARLEY.

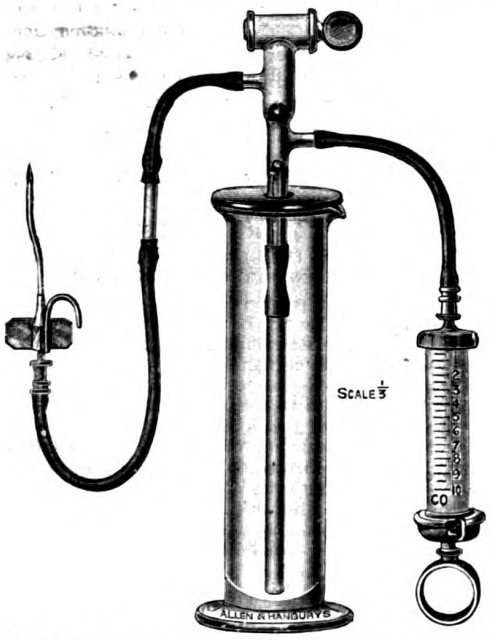
(KEEN, ROBINSON, AND CO., LIMITED, LONDON.)

1. "Patent" groats contain a maximum amount of the nutritive constituents of the oat, while all irritating husk is removed. They are rich in both protein matters (11·7 per cent.) and mineral salts (1·7 per cent.). The special method of manufacture renders them a useful adjunct with milk in infant and invalid feeding. Their value in this respect is most probably assisted by the presence of vitamines and enzymes. 2. This last observation applies also to "patent" barley, which occurs as a fine flour. Barley, of course, contains about half the amount of proteins and fat present in oats, while the easily assimilable starch of barley reaches the figure of 81·5 per cent., the oat freed from husk showing 74·3 per cent. The uses of barley flour both as a beverage and for special dietetic purposes in infant feeding are well known. The starch of barley flour seems more readily digested than that of some of the cereals.

New Inventions.

AN APPARATUS FOR THE INTRAVENOUS INJECTION OF SALVARSAN.

IN view of the increasing importance of modern anti-syphilitic remedies, in the use of which so many medical men are now receiving instruction, it is greatly to be desired that the apparatus employed in such treatment should be of the highest attainable grade. I became familiar with Professor Welchmann's apparatus whilst working at the Virchow Institute, Berlin, but further experience in its use



disclosing several weak points I devised the modification, a sketch of which is appended In practice I have found it very satisfactory.

The essential parts of the apparatus are the two ball-valves (see illustration), the seating of which must be perfect. The function of the upper valve is to prevent blood being drawn from the vein when the piston of the syringe is withdrawn, whilst the lower valve prevents the return of the solution to the receptacle which contains it. The syringe should be filled with solution once or twice and emptied so that all air is expelled. When this has been done, the tube, which has a metal male portion, should be inserted into the socket of the needle. The piston of the syringe should then be drawn in and out until the required quantity of solution has been injected into the vein. The apparatus is easily sterilised by boiling and it is sufficiently portable to be carried in an ordinary inside coat pocket. In the sketch a glass cylinder is shown, but any kind of receptacle can be employed, such as a tumbler, &c. The quantity of fluid to be injected can be accurately gauged within wide limits. For instance, if 600 c.c. of salvarsan solution is prepared in a large glass flask 100 c.c. can be injected into six patients by simply changing the needle each time. A special advantage in the construction of the needle is that after insertion into any vein it will rest on the arm parallel with the surface. When working alone the instrument can be easily manipulated, one hand being kept on the needle, whilst the other is used by means of the ring in the piston rod, to work the syringe. I have found this form of needle preferable to any other pattern, both for entering the vein and for remaining in position after insertion. In the course of my work as pathologist at Netley I had to inject salvarsan into many dark-skinned soldiers (Indians), whose veins are difficult to see, and this form of needle then proved very useful. The apparatus can also be employed for the injection of saline solution.

Messrs. Allen and Hanburys, Wigmore-street, W., are the makers.

Knightsbridge. M. J. ROWLANDS, M.D. Brux., M.R.C.S.

A CRUTCH-LIMB.

FROM his experience as consulting surgeon to an army corps Professor v. Baeyer (Ettlingen) has evolved a very



simple form of prosthesis[1] for amputations of the leg, which may be regarded as something between a crutch and an artificial limb. He calls it a "seat-stick," but probably the compound word "crutch-limb" will suggest the device better to the English reader.

The crutch-limb consists of a stick expanding above into a flat board, to the top of which two girdles are attached, a pelvic and a shoulder, both of adjustable length. The illustration sufficiently shows its method of application. The device leaves both hands free, and avoids the necessity of axillary support with its dangers of nerve compression. Professor v. Baeyer states that the crutch-limb has become highly popular in his orthopædic reserve hospital.

[1] Münch. med. Wochens., 1917, i., 829 (Military Supplement).

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The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

"..... The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient, because entirely painless; it is convenient to the surgeon, because easily and quickly applied. ..... It is possible that the treatment would be useful in dealing with ordinary ulcers, and in any case it is certain that the study of its application to the raw surfaces is worth pursuing. ....."

THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

"Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War, in reply to the deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St. Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ..."

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THE LANCET.

LONDON: SATURDAY, JULY 14, 1917.

Air Raid Psychology.

IN certain schools of biological thought a favourite theme is the phylogenetic adaptation of the organism to repeated sense stimuli of a given type, whereby appropriate reflex action, by way of defence or otherwise, is installed. By thorough-going exponents of these views it is held that since high-velocity projectiles are a recent development in warfare the sense organs have not become adapted to such stimuli, hence they cannot react; in other words, wounds thus produced are painless, at least at the moment of contact. Aerial bombardments of crowded cities are a still more recent development of "civilised" warfare, and, *ex hypothesi* the individual must be even less adapted to such stimuli than in the former instance. What, then, of his behaviour at such moments? Any thoughtful consideration of the subject will lead to the conclusion that various psychological factors are involved and that a distinction may be drawn between the response of the individual and that of the crowd. Man is still largely an instinctive animal and only a little bit reasonable; his intelligence may point the better way but innate trends may prevent his following it. Instincts have different strengths in different individuals and different races, yet probably the most general and the most powerful is that of self-preservation. This is called into being by the emotion of fear, and tends to express itself either in flight or in concealment, or both. The more unusual, strange, unfamiliar the exciting stimulus, the more overpowering is the instinct likely to prove—*Omne ignotum pro magnifico* is a very old saying, but also a very true one. When, therefore, without warning, a bomb drops from the blue in a crowded thoroughfare to dash for the nearest shelter is as instinctive an act as for the puppy to hunt the first rabbit that crosses its path. Further, what is strange also excites the instinct of curiosity, which, once aroused, may come into conflict with the other instinct; and recent experiences undoubtedly go to prove that at its bidding the individual may brave the risk and ignore the call of self-preservation.

But other psychological factors, other psychical stimuli, come into play and jostle each other for possession of the final common path that leads to action. With increasing knowledge our behaviour becomes more and more rational; and, after the first momentary instinct to flight, a glance at the sky may reveal the reassuring fact that the bomb-droppers are not directly overhead, and at once the stream of action is determined in another direction. Or the individual may have run the gauntlet on a previous occasion and, profiting by his experience, ignore both fear and curiosity. The citizen who hears the cry of "Zeppelins!" and turns over muttering, "I wish they'd let me sleep," is not acting in a spirit of bravado, but according to a psychological law. Further, anger or pity is an emotion that may oust fear or curiosity and determine the individual's conduct. And yet again, what of such stimuli as self-control and sense of duty? Whatever the policeman's first instincts may be, no one who has seen him directing the current of humanity to safety at these anxious moments can doubt the motives which actuate him. The crowd, however, as has been acutely pointed out by GUSTAVE LE BON, is something more than a congeries of individuals. It is apt to be swayed by certain stimuli, just as it possesses certain psychological characteristics, to which the individual is a stranger. A crowd is apt to be impulsive, mobile, unstable; in it the heterogeneous is swamped by the homogeneous. Fear may be felt by the individual, but panic is a crowd-phenomenon. On the other hand, crowds may exhibit praiseworthy features, may demonstrate the ruling activity of virtues, whose rôle in the behaviour of the individual may be less easy to detect. Above all, what has often been regarded as a fundamentally important factor, that of race, is seen *par excellence* in the response of the crowd to stimuli of the character that we have become familiar with since the outbreak of the war. From a psychological viewpoint it is instructive and not a little entertaining to glance over the comments of the lay press after such experiences as have recently been ours in London. It may be remembered that after the raid of Sept. 2nd, 1916, when an enemy airship was brought down in flames, a daily paper next day described the sight as "beyond doubt the greatest free show that London has ever enjoyed." No doubt thousands, who had satisfied themselves that they at least were safe, positively "enjoyed" the whole thing, and forgot the acute mental distress and anguish of the actual sufferers of the raid. Sometimes anger is uppermost, as when a well-known writer declares the mothers of England "will not long consent to sit silent with their arms tied behind their backs." Another publicist, irritated at the frequency with which the "calm" of the public is insisted on, candidly protests, "It is only oysters who are not rather frightened when bombs are dropping round." There is no inconsistency in these varying comments, all of which are fair.

A large out-patient department of a hospital serving a raided district is an excellent place in which to learn what the effects on the attacked population really are. From this experience, more than once repeated, we believe in the traditional British phlegm, and we think it no exaggeration to assert that our public, as a whole, is calm and its conduct exemplary. He would be rather less than human whose heart does not beat more quickly when the guns indicate the proximity of the invader, and in the bombed areas there are many whose state of nervous fear is not far removed from the "shell shock" of the firing line. Between these, whose temperaments are of a nervous type, and others who, even in the danger area, may pride

themselves on their sangfroid and nonchalance, there remain the crowd of our fellow human beings animated by a diversity of instincts and motives, and pursuing a course determined by that stimulus which may attain the final common path and blossom into action. How different these psychical stimuli are we have sufficiently indicated, and how well, on the whole, reason has prevailed we are proud to record. We made a brief investigation into the demeanour of the inmates of the metropolitan hospitals during the last and severest air raid on London. A summary of this will be found on another page,[1] and shows that the hospital patients, obviously susceptible material to sudden shock, under good supervision remained calm. Nor do medical men hear much of subsequent apprehensiveness, sleeplessness, reaction in the form of fatigue, collapse, or breakdowns. Some of us know of the fits, hysterical and epileptic, that take on a fresh development, the strokes of paralysis from excitement, the heart failures, the acceleration of latent pathological processes, but these have not been common occurrences. And in the great majority of our fellows we believe the evidence before us shows their demeanour under stress to have been unimpeachable, and to augur well for whatever days of trial may yet be in store.

War Bread.

THE Ministry of Food have dealt frankly with the criticisms that have appeared lately as to the unpalatability and indigestibility of war bread—the former is admitted and the latter is not denied where baking has been faulty. We learn from an authoritative source that applications are reaching the Ministry of Food for permission to use pure wheat flour. Up to the present date the numbers of these applications have not been large, but they may grow to such an extent that more careful scrutiny will have to be made before granting them. The medical profession will render the country an undoubted service in cöoperating with the Ministry of Food to prevent an abuse of the privilege. In appealing to them to do this it may be pointed out that complaint is by no means general, the applications coming in much larger proportions from certain districts than from others. Thus Hampshire, Yorkshire, Lancashire, Lincolnshire, and Cornwall furnish 64 per cent. of the total number of applications from England, with less than one quarter of the total population.

A committee of scientific experts have instituted, at the instance of the Food Controller and by arrangement with the Wheat Commission, a series of experiments on the digestibility of war bread and the advantage of milling to various standards. The experiments are not complete, but we may look for an improvement of conditions as a result of the work. The Ministry of Food admitted at a press conference held in Grosvenor House on Tuesday last that certain millers have not yet succeeded in properly adapting their equipment to the existing orders, with the result that badly made flour has been used in certain districts. On the other hand, most of the mills have overcome the difficulties which at first presented themselves, and are now producing good and wholesome flour from mixed grain. War bread has not yet become a uniform commodity; but that it has been produced in enormous quantities in many districts with differing populations, and without a complaint arising, shows that the system of obtaining a palatable and digestible war bread merely awaits further development. The rapidity of this development will largely depend upon the attitude of the miller and baker, and when these important persons follow intelligently the directions supplied them for producing a good flour and bread respectively from mixed grain, then a food that is good both in texture and condition may well be hoped for. It must be admitted that both the miller and the baker have considerable difficulties to contend with in the production of palatable bread which will keep under present conditions. To the miller is set the problem of producing from maize and other cereals, with, in many cases, imperfect machinery, grades of flour which will blend satisfactorily with wheat, and flour containing more of the outer part of the grain than formerly. To the baker is set the problem of baking bread from a composite flour which differs in properties from that which he has been accustomed to handle. On the whole, both the miller and the baker have met these difficulties remarkably well, and there can be little doubt that, with further experience, the troubles will be completely overcome. That a palatable and nourishing bread can be produced which complies with the orders of the Ministry of Food is quite certain. The importance of this statement cannot be over-estimated: it is a confident message from those who know, and may be accepted at its face value. And the message means nothing less than this: the nation can be saved from bread famine by complying with the directions laid down and the precautions taken. The fact is well worth bearing in mind by those who are tempted to grumble. The suggestion is not that *half* a loaf but that a *whole* loaf is better than no bread at all. Such a change in the composition and texture of our daily bread as is enjoined by the orders of the Food Controller was bound to lead to dissatisfaction in many quarters, but every endeavour is being made to minimise the sacrifice which, to some extent, the consumer is asked to make. As time goes on war bread will improve rather than deteriorate; the further attention given to the special requirements of its preparation will assuredly have good outcome.

Questions like ropiness, mouldiness, staleness, and hardness of certain war breads are all being rapidly and seriously dealt with by competent experts. In the meantime no uneasiness need arise. Ropiness, for instance, is a fermentation due to a bacillus parasitic on grasses, and quite harmless to man or other animals. With the coöperation secured of the miller and baker, no reasonable ground for complaint can arise, while it should be a source of satisfaction that a general acceptance of war bread means robbing the enemy of a weapon

[1] See p. 59.

which he appears to look upon as infallible. The complaints received very largely reflect the fact that this is the third year of an unprecedented war. The country is in a state of siege and the supply of wheat is not enough to provide all the bread needed. Admixture of other cereals less adapted than wheat to bread-making is an actual necessity of the country, and one of the most serious responsibilities of the medical profession is to assist the administration by checking the flow of uncalled-for complaints. The relation of Government regulation bread to the health of the community is under the earnest consideration of a committee of the Royal Society.

Annotations.

"Ne quid nimis."

MENTALLY DEFICIENT OFFENDERS.

THE Report of the Howard Association for 1916 calls attention to the large proportion of physically and mentally deficient persons now in prison, and quotes from the Prison Commissioners' Report for the same year the statement that "one of the notable effects of the war on the prison population has been that the receptions are now, for the most part, confined to the physically and mentally weak." Seeing that the male population of the prisons is less than one-half of what it was the year before the war, the existing proportion of defectives is, of course, easily accounted for. Probably but few of the *floating* population of men of military age who in times of peace inhabit the local prisons for more or less short periods have not either volunteered or been recruited when deemed fit for military service of some kind. As regards the "mental defectives," there are doubtless many more of this class in prison, both now and before the war, than the 204 who were stated by the Prison Commissioners in 1916 to have been certifiable as such under the Mental Deficiency Act. Commenting on these facts, the Howard Association pertinently asks: "Why is it that mentally defective offenders are admitted to prison at all, and what is the use of certifying them as mentally defective if they are to be released, as was the case last year?" And the Association correctly replies to these questions that "it is the law of the land, and that there is nowhere else than prison for these offenders to go." The remedy, or at least an initial remedy, for this undeniably deplorable state of things, now suggested by the Howard Association, is that some of the prisons which have been closed or otherwise used during the war should be devoted to the segregation of mentally defective prisoners, in the interests of society and of the half-witted individuals themselves. We think that this suggestion involves a total misconception of the existing difficulty. As long as institutions properly adapted for the segregation, cure, and employment of mentally defective persons are unavoidable it would be worse than useless to transfer the patients at this time to small prison buildings—for it is mainly the small prisons which are empty—where nothing could be done for their benefit. No possible good of any kind could result beyond the convenience of confining them until suitable places were found for them. Such prisoners would be far less better off than they are now, and the suggested scheme could not be tolerated with only the general welfare of society in view. At present all that has been done, since the passing of the Mental Deficiency Act, for the care and control of mentally deficient offenders who are unfit for prison discipline is the establishment of an institution for women only. The Board of Control, which is now responsible for carrying out the provisions of this Act, has not as yet supplied accommodation for male defective offenders, although, even before the war, a prison which could have been rendered approximately suitable for a time was placed at their disposal by the Prison Commissioners. It may be said here, also, that before the passing of the Mental Deficiency Act the prison authorities made several endeavours to minimise the re-admissions to prison of mental defectives by informing the local police of all such prisoners discharged into their districts, in order that they might be brought before the notice of the local authorities and appropriately dealt with when found to be uncared for; but practically no regard was taken of such information. It seems to us that the prison authorities, who were among the first to press strongly on the Government more than 12 years ago the necessity for legislation in order to provide for proper care and control on discharge of prisoners who were found quite unable by reason of mental defect to shift for themselves, should not be saddled with the responsibility of directing asylums for either the mentally or the physically defective. Whether wisely or not the law has apportioned this duty to a Board of Control mainly composed of the former members of the Lunacy Commission, and it is rather for this Board than for the Prison Commission to make reply to the questions asked by the Howard Association.

THE TREATMENT OF SCIATICA BY APPLICATION OF STRONG HYDROCHLORIC ACID.

Dr. Harrington Sainsbury has described in THE LANCET of June 16th remarkable results from the treatment of neuritis, and particularly of sciatica, by the application of strong hydrochloric acid to the skin along the line of the inflamed nerve. He ascribes the treatment to Dr. Hugh Wingfield, but we may point out that it is not new and was noticed in our columns nearly 20 years ago[1] in an annotation on an article which was published in the *Semaine Médicale*. We may recall the circumstances, as this valuable remedy seems in the interval to have been almost completely forgotten. Moreover, the manner of its discovery is interesting. This was due to an accident founded on a blundering ignorance of chemistry. A man who had suffered for many years from sciatica was treated in an Algerian hospital by hypodermic injections of salt and water, but without much success. After he had left he bethought him that perhaps the salt was not strong enough and that a stronger preparation of salt might be successful. He therefore procured some "spirit of salt" (strong hydrochloric acid) and painted it on the skin. He got rid of his long-standing trouble in a few days. Shortly afterwards he attended the hospital for some other affection, and confided in Dr. Bourlier, professor of therapeutics, whom he saw, how he had got rid of his sciatica. Dr. Bourlier thought the plan worthy of trial, and employed it in several cases with invariable success.

[1] THE LANCET, Nov. 20th, 1897, p. 1338.

A thesis was then published on the subject by Dr. C. Gennatas, of Montpellier, on the basis of a dozen cases of sciatica, all of which were completely relieved by this means. As far as we know, only one paper on the subject has been published in this country. After the appearance of our annotation Mr. R. A. Bayliss reported 16 cases of sciatica treated by application of hydrochloric acid over the course of the sciatic nerve.[2] In most instances they had defied every other treatment. Two patients were completely cured, 11 were considerably relieved, and 3 did not improve. He also treated 10 cases of intractable pain in the heels and plantar region, the sequelæ of acute rheumatism, many being gonorrhœal. Four of the patients were quite cured, 1 was very much relieved, and 5 were not improved.

A DEFENCE OF HYPO-NUTRITION.

AN impartial study of the effect of lowered nutrition on a large unselected population would be of great interest at any time, and especially now when the food blockade is a recognised form of warfare. At a recent military-medical meeting in Berlin Professor Klemperer summarised the results of some hospital observations, probably made at the Moabit Hospital, of which he is director in peace times. No one, he says, need feel ill merely because he is thin, since a loss of 10–20 per cent. of his peace-time weight is normal. Except to manual labourers a reduction of the musculature makes no matter. Per head of hospital population not more than 1500 calories are available, amongst which milk and eggs are still included, but practically all diseases heal without delay, even when the protein intake is diminished. Professor Klemperer goes on to consider war bread. Made with 94 per cent. of flour containing much gluten it is tolerated by a surprisingly large number; even the cellulose is utilised in consequence of the formation of new intestinal ferments. The increased vitamine intake has resulted in a vigour new to many folks and a corresponding disappearance of constipation and neurasthenia. Gout and diabetes have also greatly diminished. On the other hand, Professor Klemperer noted an increased severity in the cases of tuberculosis coming up as out-patients, many of whom had seen active service, and also in affections of the blood-vessels owing to the physical and mental strains of warfare.

THE PARASITOLOGY OF PYORRHŒA ALVEOLARIS.

IN recent years the clinical effects which are supposed to result from pyorrhœa alveolaris and the causation and treatment of the disease have received a good deal of attention and been the subject of much experimental investigation. The difficulty has been to distinguish amongst the crowd of micro-organisms present in the pus from the alveolar pockets those which were primarily responsible for the lesions and those which were merely secondary infections. These latter, however, may be, and probably are, of great importance in the causation of symptoms. Attention has been drawn to the almost constant presence of amœbæ in the pus, and the disease has been attributed to their action, but on the whole the balance of opinion is against the view that they are the cause of pyorrhœa. It is true that amœbæ are nearly invariably to be found, but there does not appear to be any connexion between the severity of the disease and the number of amœbæ, nor has inoculation of the purified organism in animals or in the tooth sockets of the experimenters themselves produced any characteristic lesions. With this conclusion Dr. Aubrey H. Drew and Dr. Una D. Griffin, in the April number of the *Journal of the Royal Microscopical Society*, appear to agree. Taking advantage of the large amount of material passing through their hands at the Dental Hospital, they have investigated very fully the parasitology of pyorrhœa, and have described some interesting phases in the life cycle of the amœba and discovered what they believe to be new species of flagellates. In conjunction with Dr. Penfold they attempted, though without success, to obtain a lytic serum by the injection into animals of pure cultures of amœbæ which by their technique they had succeeded in obtaining from the pus. These cultures were able to produce abscesses containing living amœbæ when inoculated subcutaneously in the guinea-pig. No complement-fixation bodies could be detected in the patient's blood serum when alcoholic and saline extracts of the amœbic cysts were used as antigens. The important observation was made that cysts which closely resembled the form described as *Entamœba minuta* are found in the fæces of pyorrhœa cases, and might give rise to error in the diagnosis of dysentery; these cysts are believed to be those of *E. gingivalis*. The investigation was not mainly concerned with the clinical aspect of the question, but it was noted that emetine was of no value in treatment. Mechanical injury was thought to play an exceedingly important part in the commencement of the disease, which almost invariably starts as a marginal gingivitis. Following the injury the spirochetes, such as *Sp. vincenti*, appear to play the chief part in the disease, causing destruction of tissue and the formation of pockets in which pyogenic cocci and other organisms find a good breeding-ground where toxin formation and absorption can go on continuously.

ANGLO-SAXON MEDICINE AND THE ORIGINS OF FRENCH SURGERY.

ON Anglo-Saxon medicine Dr. Charles Singer throws light in an erudite monograph reprinted from the Proceedings of the Royal Society of Medicine and entitled "A Review of the Medical Literature of the Dark Ages, with a New Text of about 1100." Throughout the period prior to the twelfth century, when the translations from the Arabic writers, which afterwards so largely influenced mediæval medicine, had not yet permeated Europe, the Anglo-Saxons would seem to have stood practically alone among medical authors outside the pale of Latin or Romance Europe. Some 89 vernacular medical texts in Teutonic, or, as we should prefer to say, Nordisk languages, have been reprinted by Professor Sudhoff, and of these, as Dr. Singer points out, "not more than thirteen are earlier than 1100, and of the thirteen all save three or four and all the longer texts are English." Chief among these texts is the "Leech Book of Bald," probably written in the first half of the tenth century. This contains only herbal remedies with the conditions justifying their employment. Dr. Singer says:—

"The general characteristic of this Anglo-Saxon literature is the wide knowledge of herbs which it displays, together with the extreme simplicity of its pharmaceutical processes. There are no anatomical descriptions, there is no attempt

[2] Brit. Med. Jour., Nov. 19th, 1898, p. 1550.

to separate diseases from symptoms. The pathological condition is named and the remedy follows (as in the περὶ δόδαξίων or the Leech Books), or the herb is named and the symptom follows (as in the first part of the Herbarium of Apuleius)."

The text reprinted in Dr. Singer's pamphlet is the medical portion of the Scientific Encyclopædia of the Twelfth Century, contained in a MS. in the Library of St. John's College, Oxford. The work as a whole is perhaps the earliest known encyclopædia. It is couched in an often surprising latinity, and affords a good idea of the state of knowledge at the time of the Norman Conquest. The medical portion of the compendium deals with the constitution of the body in relation to the four humours, the regimen of the four temperaments, phlebotomy, prognostication of life and death, herbs, weights, measures, electuaries, plasters, an Anglo-Saxon charm to stop bleeding of the nose, the relation of fevers to the humours, the principles of pathology, panaceas, remedies, and the diseases to which they are applicable. In all this there is no word of surgical technique, even in the case of bleeding, or of surgical instruments, which, as Dr. Singer points out in a further learned account of the Guy de Chauliac MS., preserved at Bristol, were not figured in diagrams before the thirteenth century. Guy de Chauliac's MS. belongs probably to the period between 1420 and 1435, when John, Duke of Bedford, was Regent of France. The document was apparently written for presentation to him by Jean Tourtier, Master in Surgery. It contains eight miniatures, reproduced by Dr. Singer, representing various operations. We have here the origins of modern surgery. In one picture, for instance, an inguinal bubo is being opened, in another a fractured limb is being put into splints. Phlebotomy is practised as at a much later date, the patient holding a surgeon's staff of the kind still seen over barbers' shops, while blood pours from his right arm into a bowl. The pictures of ancient trephining instruments are of great interest, as are also others representing cauteries and gouges, but the modern instrument maker is not on familiar ground here as he would find little to suggest the evolution of his work.

ERRATUM.—In a note last week on the debt of medicine to the discovery of dyes an obvious misprint occurs, a negative having been omitted. We speak of the possibility of finding selective substances "which are inimical to the human organism"; the sentence should be "which are *not* inimical, &c." The context has probably prevented any misunderstanding.

THE LANCET, VOL. I., 1917: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 30th are now ready. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

THE METROPOLITAN HOSPITALS AND THE AIR RAID.

HOSPITALS have a special and severe responsibility upon them in the event of air raids, as they have to provide for the protection of an aggregation of individuals, any or all of whom may be affected in ways that preclude opportunity being taken of ordinary precautions. For some patients the attacks add to a mental depression already upon them, while for others the physical disabilities increase the sensations of terror by the knowledge of abnormal helplessness. In these circumstances it is necessary that complete arrangements should be made in advance, not only for warding off danger as far as possible, but for keeping the unfortunate charges of the institution in good heart.

From an inquiry we have made at various of these institutions in the metropolis it is certain that the authorities have fully recognised their onus, that their staffs, medical and institutional, dealt with an anxious situation calmly and promptly, and that everywhere the note of readiness removed the worst concomitant of an air raid—namely, panic. It is noteworthy—though surprising only to those who are unfamiliar with the courage characteristic of hospital inmates in all circumstances—that the patients played their part splendidly; men, women, and children alike remained, almost without exception, calm and reliant upon the help that could be afforded them.

The following are notes made at the various hospitals:—

St. Bartholomew's Hospital.—There was no panic either among men or women. The nursing staff were able to keep those in their charge well under control, and no lasting bad effect from the severe strain was noticed even among the medical cases. The precautionary arrangements worked without a hitch.

Charing Cross Hospital.—The calmness of the patients was wonderful. Two girls cried, but no one else showed any emotion.

St. George's Hospital.—The patients remained perfectly calm and there did not appear on the surface to be any great difference of demeanour in the behaviour of the sexes. The main idea seemed to be curiosity and an endeavour to ascertain what was happening. Certainly there was no question of fear. The special arrangements made at the hospital, both for the treatment of a large number of emergency casualties and also for the speedy removal of patients, if necessary, from any part of the hospital, worked very satisfactorily.

Guy's Hospital.—A member of the staff, who was engaged with out-patients at the time of the raid, reports the demeanour of the patients to have been very good indeed. "Though naturally a little restless and anxious, in no way was there a tendency to panic. One woman commenced to cry but was soon reassured. I allowed my patients and the ordinary casualty patients to smoke; they appreciated this and there was no difficulty in controlling them. In my special department where nervous manifestations might have been expected, none occurred. One man who had his leg amputated on the occasion of the air raid on June 13th, when he suffered considerable shock, showed similar symptoms and cried like a child for four or five hours afterwards. The patients admitted immediately after the raid showed no signs of panic, and arrangements were quickly in hand for coping with large numbers of accidents, the junior staff and the nursing staff working admirably. I remember my head nurse's face, which said simply, "All this air-raiding is a nuisance." I had on this occasion no difficulty in getting the students to seek cover.

London Hospital.—The steady behaviour of the patients during Saturday's air raid, which has marked every raid since the Zeppelin days, was again manifested. There was no noticeable difference in the demeanour of the male and female patients, but the patients still with us who were admitted after the raid of a month ago were more terrified of this raid than any of the other patients. The arrangements made at this hospital for air raids are of the most minute and elaborate character, both in regard to the inmates and in regard to the reception of new patients, the various resident medical officers being assigned to different sections of the huge hospital with the special duty of quelling all panic and taking charge of the removal of patients should occasion occur.

St. Mary's Hospital.—During Saturday's air raid the behaviour of the patients in this hospital was excellent. The women and children, as well as the men, were calm and self-possessed, and ready and willing to submit themselves to the arrangements made by the hospital for their safety. These arrangements were all in working order.

Middlesex Hospital.—All the patients, male and female, behaved admirably during the air raid on Saturday last. That they maintained their self-control so well was largely due to the example set them by the sisters and nurses, who proceeded with their work in the ordinary way, thus inspiring the patients with confidence. This has been the case in all previous raids both by day and night. All the arrangements worked satisfactorily.

St. Thomas's Hospital.—Throughout the raid the patients behaved extremely well, though there were one or two cases of mild excitement; some of the bed-ridden soldiers were nervous, but the majority of the patients who were able to do so stood ready to give aid if occasion arose. There were some isolated cases of out-patients being nervous, but the vast majority were only anxious to see something of what was going on. The sisters and nurses of the hospital are now so used to alarms being given that they regard the whole proceeding very calmly and are thereby able to reassure their patients. The most excitement was

shown by some out-patients in the casualty department and other persons from outside who came into the hospital for shelter. These were all sent down into the basement where they remained quiet until all danger was passed. The hospital and the medical and surgical officers in attendance were prepared to meet any emergency, and there is a good supply of extra beds which would at once be sent to the wards for the accommodation of any cases brought in as a result of the raid.

University College Hospital.—The patients remained calm, the female as well as the male, and the hospital arrangements in case of emergency worked satisfactorily.

Westminster Hospital.—The patients remained perfectly calm and it was not observed that either sex was specially affected. "Nervous" cases of both sexes were somewhat upset, and some "heart" cases showed increased symptoms—rapidity of pulse, and so on. All other patients, medical and surgical, preserved their coolness excellently. The medical and nursing staffs went at once to assigned posts, their discipline being the main cause of the calm manner in which the situation was met by the patients.

The Hospital for Sick Children, Great Ormond-street.—During the raid there was no trouble whatever with the children in the wards nor with the nursing staff. The out-patient department was full at the time, and at the first sound of guns from the anti-aircraft section all the mothers and children were sent to the basement. Very few of the mothers were upset, and they were foreigners.

London Fever Hospital.—The behaviour of the patients was excellent. No cowardice was manifest. The boys with scarlet fever, with the exception of one boy who cried, took to active vocal verbalisms derogatory to the "fat-heads," "square-heads," and "pigs of Germans." Such of the female patients as could rise went to look at the fleet passing over the hospital, but one took refuge under her bed and another in a coat-cupboard. No other nervous manifestations were noticed among the patients. The medical superintendent of the hospital sends us this significant note: "I think that an anticipation of disaster was felt by most, but that they were all too proud to betray their fears by emotional manifestations."

Some of the hospitals were of course more tried than others, although for obvious reasons we refrain from indicating which. Our purpose is to show that a particularly vulnerable section of the population preserved their calm in a time of great trial, and that a well-thought-out organisation played the part assigned to it.

THE CONTROL OF VENEREAL DISEASES.

Enlightenment Campaign.

A cinema film entitled "Es werde Licht!" (Let there be light!) is being exhibited in the German cities, showing in dramatic form the misfortune which an individual suffering from syphilis can bring to his family as a result of his carelessness or his ignorance of the danger. The film is issued with the support of the German Society for Combating Venereal Diseases, and is compared by the *Münch. med. Wochenschr.* to the drama "Die Schiffbrüchigen," the German for "Les Avariés," of which an English version, entitled "Damaged Goods," continues to attract large audiences at the St. Martin's Theatre, London. The German film is said to be very impressive in spite of its undue length, the physician taking leave with the words "I have done my duty," after seeking without success to dissuade his syphilitic brother from contracting a marriage, and leaving the audience to draw the conclusion that in leaving his brother's unsuspecting fiancée to her fate the physician has by no means done his duty as judged by modern standards. The same conflict between professional and social motives comes out also in "Damaged Goods," in which, however, Brieux has drawn the rôle of the doctor on lines which command throughout the assent of the audience. The play might have indeed been written for an English audience of advanced thought except for the unfortunate statement made by the doctor, and not challenged, that not more than four out of every thousand young men have failed to run the risk of contracting syphilis. It is impossible to exaggerate the educational value of such plays and films as these, and Brieux may be regarded at the present time as a main agent in bringing the evils of unchastity before the youthful population of London.

The Early Preventive Treatment of Venereal Diseases.

We have been reproached during the last few months with, on the one hand, rendering accessible to those who wish to make use of them the means of indulging in promiscuous sexual intercourse without risk of contracting venereal disease; and, on the other, with refusing to regard the prevention of venereal disease as a matter purely of physical hygiene without reference to social and moral considerations. We therefore take the opportunity of printing the following letter which we have received from an Indian correspondent. Without containing anything new, this letter takes the *via media* which a medical man can adopt with a clear conscience towards his scientific knowledge and his social relations.

I have read with keen interest the correspondence in your journal on the prophylaxis of venereal diseases. The key to the situation lies in the realisation of the fact that while prophylaxis is good in its own way, it is capable of doing harm by removing the fear of consequences that has exercised a healthy check on illicit intercourse in some cases, though not in all cases. That consideration would adequately weigh against the rule of giving prophylactic advice if it were practicable to keep the advice away from those who seek it. But it is not so. Some may agree not to give such advice, others will disagree. And if the profession were to agree to observe the taboo, the quack would step in to supply the demand from the public. Since the advice is sure to be forthcoming, it would be better to let it come from the profession that knows its business than from the quack, and from the more scrupulous section of the profession than from the less scrupulous one. An attempted taboo would prove disastrous by driving the advice-seekers to less scrupulous and less competent advice-givers.

If we cannot withhold the advice, we should minimise the harm it is capable of doing by warning the patient that no prophylaxis besides abstinence is absolutely reliable or altogether safe, and informing him that illicit intercourse is injurious in a variety of ways, and that venereal diseases are not the only bitter fruits it bears. In that connexion a suitable moral lesson can be given which may have some salubrious effect in some cases if not in all cases.

In short, where advice is sought for, it should be given alongside with suitable moral advice. But it should not be carried home to those who seek it not. The great majority of such people would not care to follow the advice. On the other hand, immense harm would be done to the nation at large by openly countenancing and indirectly justifying indulgence, and thereby removing the sense of impropriety that has hitherto served as an effective healthy check in many cases, though not in all cases.

People who delight in considering themselves practical and scientific are prone to belittle and ignore the invisible moral and spiritual forces that rule the conduct of man and the destiny of nations, and to think too much of the visible means that achieve tangible results. But it is the invisible that counts in the long run, and material achievements eventually come to naught where they are not along the line of moral requirements. We should therefore take care not to preach and popularise prophylaxis at the risk of spoiling the moral sentiment and lowering the moral tone of the nation at large.

Princess-street, Bombay, April 28th, 1917. J. K. DAJI, L.M. & S.

NATIONAL BABY WEEK.

THE week in London closed under circumstances which amply justified the National Baby Week Council in having decided to give up street processions. On this day Queen Alexandra distributed at the Central Hall, Westminster, the prizes and certificates which had been awarded in the various competitions. As a result of Baby Week Adeline, Duchess of Bedford, announced at a meeting of mothers the establishment of a hostel for blind infants where treatment would be given and education arranged for them as they grew up. Dr. R. M. Wilson, who spoke at a conference on mothers' rights, emphasised the need for adequate medical attendance for mothers, as to which, he said, all idea of charity should be eliminated, the health of women and children being the proper care of the State. The new day nursery, which was opened by Lady Rhondda, at Edridge House, Fulham Park-road, with special grants from the Ministry of Munitions and the Board of Education, will accommodate 50 children and is regarded as a model of its kind. Mr. J. C. Jackson, the medical officer of health for Fulham, is chairman of the general committee. At a conference where the question of the supply of midwives was discussed, Dr. E. W. Hope, the medical officer for Liverpool, advocated the fixing of a standard of skill for the midwife, to whom some attraction should be held out in order to ensure the well-educated woman such remuneration as to free her from financial anxiety. He was not in favour of making the midwife a municipal officer. Through the midwives alone could the benefit of antenatal care be fully realised. Fewer doctors would be available for midwifery after the war.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of the Fellows of the College was held on July 5th, the President, Sir W. Watson Cheyne, being in the chair. The result of the election to the Council was as follows:—

	Votes.	Plumpers.		Votes.	Plumpers.
Vincent Warren Low	295	38	Henry Betham Robinson	188	15
James Sherren	228	32			
William Harrison Cripps	220	10	Harold Barr Grimsdale	147	28
Francis James Steward	197	53	Percy William Bassett-Smith ...	137	13

Colonel Charters Symonds, the Vice-President, declared that Mr. Warren Low and Mr. Cripps were re-elected members, and that Mr. Sherren was elected a member of the Council of the College. Seven Fellows voted in person, and 628 votes were received by post. Two voting papers were invalid and three arrived too late. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH:

THE ASSESSMENT OF THE VALUE OF MURMURS.

To the Editor of THE LANCET.

SIR,—The principles which should underlie every clinical investigation are (1) to find out the mechanism by which each sign is produced, and (2) the effects which the cause of the sign has on the individual's future life. No doubt Sir Douglas Powell would say these principles are but truisms, but they are truisms of that kind which everyone reckons to recognise, but which no one puts in practice. The state of our knowledge of nearly every clinical sign reveals how systematically these principles have been ignored, and the attitude of the profession towards murmurs shows the need for applying them in practice. My reason for wishing Dr. Alexander Morison—or, for that matter, any other writer—to state precisely how a murmur should be assessed was to show that this could not be done. In this way I wished to emphasise the fact that a symptom so common, one which every doctor fancies is well understood, has never received that careful investigation which would enable us to appreciate its clinical significance and its practical application.

I could illustrate in numerous ways the need for a more thorough understanding of the significance of murmurs, but I will limit myself to one instance. Every doctor who engages in general practice will have from time to time put to him the question—whether a woman who has, or is supposed to have, some heart affection should be allowed to become pregnant. This is a momentous question, and every year concerns thousands of women. Now there is not in all medicine sufficient knowledge to enable the practitioner to answer that question in a satisfactory manner, and though it is constantly arising the practitoner can do nothing but give an opinion based mainly on guesswork and not on accurate knowledge. Why is this? Simply because he is taught by men who are ignorant of the subject. His obstetric teacher's knowledge of heart disease is too imperfect for him to be able to tell. His teacher of medicine never attends obstetric cases, so he can't know the effects of pregnancy on the heart. Why should not these teachers manfully acknowledge their ignorance? They have not had the opportunity to acquire the knowledge—why not frankly state this fact, and ask those who have the opportunity to undertake the inquiry?

The reason I speak thus dogmatically on the subject of heart disease and pregnancy is that this problem has been before me for many years. Shortly after entering general practice I attended a woman in labour with mitral stenosis, who died after great suffering, undelivered. I was so impressed by my helplessness that I read all the literature I could find on the subject. I was struck by the fact that no one seemed clear as to the source of danger, and no one had really studied the effects of pregnancy on the circulation of the healthy woman. I resolved to do this, and for years I made observations on women before pregnancy, during pregnancy and labour, and during the puerperium and afterwards. I accumulated a large number of observations, and when I came to analyse them I found myself unable to interpret them. I found variations in the size, the shape, and the position of the heart; modifications of the heart sounds and the appearance of murmurs; variations in the rate of the heart and frequent irregularities, and great distension of the jugular veins with marked pulsation. I searched the literature for enlightenment and failed to find it. I was therefore driven to a preliminary investigation—namely, to seek to know the mechanism by which these signs were produced and the effect the cause of these signs had upon the patient's future. This is what I have been doing the last 30 years. I have not solved the problem; I have only been able to indicate the lines on which this problem may be solved and to help to furnish some information in regard to the nature of the symptoms that may be of use to future investigators.

In my inquiry into the significance of these signs I was led to the conclusion that little advance could be made by the mere study of the murmurs, for I found that when heart failure ensued it was by impairment of the efficiency and by changes in the structure of the heart muscle. This led to a prolonged and systematic inquiry into the functions of the heart muscle and the signs of its inefficiency. Though for over 100 years it has been taught that the integrity of the heart's efficiency depended on the heart muscle, little or nothing had been done to study with precision and detail the signs by which this inefficiency was made manifest. The results obtained have in many ways shed a new light on the meaning of abnormal signs and on heart failure. Thus the relation of the condition of the heart muscle to any given murmur may be expressed in this way: (1) the presence of the murmur may indicate a valve defect which embarrasses a healthy muscle in its work, and we therefore have to look for the signs of embarrassment; (2) the presence of a murmur may indicate that the disease which damaged the valve may have also damaged the heart muscle and impaired its efficiency, so that we have not only to search for the signs of inefficiency, but also for signs of a damaged heart muscle.

I have failed to understand the mechanism by which the vast majority of systolic murmurs are produced. To call them curable mitral regurgitations, bruits of debility, exocardial and so forth, was simply to give them a name which conveyed a false impression, as I could get no evidence from studying them during life and examining the hearts after death to justify such terms. Failing in this, I turned to the question of the assessment in regard to the patient's future. By watching large numbers who led strenuous lives for many years I realised that the majority of systolic murmurs were without importance, and in searching for a method for differentiating those without significance from those that were of significance I inquired into the state of the heart muscle and came to the following conclusions.

If a systolic murmur was present and the response to effort was good, and there was no sign of any myocardial involvement, then the murmur was of no significance. If there was associated with the murmur evidence of functional inefficiency or of myocardial involvement, then the prognosis would depend on the extent and degree of the inefficiency and of the myocardial involvement, and this would be the object of further inquiry.

To illustrate the defects in our knowledge of the significance of murmurs, and to show how I have attempted the solution of the problem, I will comment on the letters of Sir Douglas Powell and Dr. E. H. Colbeck, as specific illustrations will carry more conviction than abstract propositions, however simple and convincing they may be.

Sir Douglas Powell gives an illustrative case which he quotes approvingly as giving all the details necessary for assessing the value of a diastolic aortic murmur. I quite agree with him it is a good example of the way in which the old school would view the matter, but in contrast to this I would show how partial and uninformative it is when it is desired to assess the value of the murmur. From the context I gather this case was one for life assurance. Now what would be the attitude of a medical examiner to such a case? Some would at once reject the man as a candidate, others might deduct a number of years from his prospect of life. On what grounds? Simply because experience tells that many people with aortic regurgitation die prematurely. Experience also tells that others with aortic regurgitation may live the normal span. As we do not know how to differentiate these, different examiners adopt different standards—but in no case is there such precise knowledge as to enable the examiner to assess the value of the murmur with any degree of accuracy.

Sir Douglas Powell's description leaves out certain data which are essential to the assessment. The first stage in heart failure is invariably shown by a limitation of the field of the heart's response to effort. This is made manifest to the patient by a sense of distress which is brought on by effort. There are a great number of sensations thus produced, each of them provoked by a different mechanism, and each of them differing in their significance, such as breathlessness, sense of exhaustion, tightness across the chest, pain, abnormal action of the heart. In estimating the efficiency of the heart muscle, not only the actual limitation of the field of response has to be recognised, but the sensations provoked by exhaustion, even if the field be not limited to any marked extent.

Now I know that everybody reckons to recognise that heart failure is manifested by a limited response to effort, yet the old school has never recognised its real significance. I maintain strongly as an experience forced upon me for the past 30 years that the recognition of the heart's efficiency is of the very first importance, of far greater importance than the recognition of any signs revealed by instrumental examination. The reason I say that the old school have never realised its importance is shown in two ways: Firstly, the questions asked by insurance companies never include the response to effort among their inquiries. Witness Sir Douglas Powell's description of his case—the response to effort is never referred to. Secondly, the profession has only an imperfect knowledge of the mechanism by which the sensations of distress in response to effort are brought about, and their relation to the heart's efficiency has never been fully appreciated.

I have already dwelt on the importance of changes in the heart muscle in estimating the value of a murmur yet save for an incidental reference to an increased size Sir Douglas Powell makes no reference to possible change, in the heart muscle. It is now a well-established fact that a disease like rheumatic fever frequently invades the heart muscle. Hitherto such invasion has been spoken of as silent—that is to say, it was supposed to give no sign of its presence. This, however, is not true, for the evidence is there, only we are too blind to see it. The changes in the size of the heart, in the rate of the heart, and in the rhythm of the heart afford evidence, but we are not yet sufficiently informed to value these changes. Take only one instance which shows definitely the invasion of the heart muscle. During rheumatic fever deposits of cells occur in the myocardium at different places which ultimately change into cicatrical lesions, damaging the heart muscle. If a deposit of these cells takes place on the bundle connecting the auricle with the ventricle, then the transmission of the stimulus from auricle to ventricle is interfered with, and we can now recognise the sign which this produces. Before the war my fellow-workers in the cardiac department of the London Hospital were making a study of all the phenomena in acute affections of the heart, and especially in rheumatic fever. They found in acute rheumatic cases a considerable number (about 10 per cent., if I remember rightly) in which they got evidence of a damaged bundle. Now it is a matter of chance whether the bundle is touched, so that the possibilities are that there are a great many cases where the deposits occur which do not fall on the bundle.

In reading Sir Douglas Powell's case I called to mind a similar case, a young man whom I attended for a mild attack of rheumatic fever and in whom I thought the heart had escaped. Some months after, when he seemed fit and well and was working hard, I detected a diastolic murmur. There was no enlargement of the heart. On taking a tracing of his jugular pulse I found evidence of an increased interval between the auricular and ventricular contractions, proof that the disease had invaded and damaged the muscle.

Perhaps this aspect of the matter will be better appreciated if I deal with Dr. Colbeck's statement that our knowledge of mitral stenosis has not advanced from the place where Sir W. Broadbent had left it. In my remarks I desire to convey no reflection on the past masters in clinical medicine. Broadbent was a great physician with a remarkably open mind, and I revere his memory from a personal point of view, for he was one of the very few physicians who appreciated what I was driving at, and for the kindly encouragement he gave me.

In the year 1880 I saw two young men, both had had an attack of rheumatic fever, and both had slightly enlarged hearts, and both had mitral systolic murmurs. Both were mechanics, and both were refused entrance into their trades union sick club because of their damaged hearts, though both had followed their laborious occupations without distress. I watched their cases for over 25 years. One pursued the even tenor of his way with no alteration in his cardiac condition. The other had a more chequered career. Seven or eight years later I discovered he had a short presystolic murmur. About 1890 I became aware that the murmur was separated by a slight interval from the first sound. In later years the separation became very distinct, the interval being so marked that it conformed to the usual description of a mid-diastolic murmur. About this time I was trying to unravel the meaning of the jugular pulse, and as he had a well-marked venous pulse I had no difficulty in setting a good record. There was something peculiar about the waves which I did not understand at the time, but later knowledge enabled me to recognise that there was an increased a.-c. interval—as I called the time between the waves in the jugular due to the contraction of the auricle and the carotid pulse. This I ultimately learned indicated an injury to the bundle connecting the auricle and the ventricle. The time of the mid-diastolic murmur corresponded to the time of the auricular wave in the jugular pulse, so that in this case it was demonstrated for the first time that this mid-diastolic murmur not only told us of the presence of mitral stenosis, but gave the information that the muscle wall of the ventricle was also invaded by the rheumatic disease, which had damaged the a.-v. bundle.

Somewhere about 1895 I detected a new murmur immediately following the second sound, so that he then showed a systolic, an early diastolic, and a mid-diastolic murmur. His heart's rate was always about 60, so that we had no difficulty in recognising these different murmurs. He continued his work till 1897, when he became seriously ill from extreme heart failure with dropsy. After a long period he made a slow recovery. During his illness his heart became very irregular, an irregularity which at the time I did not understand. I took careful records of his radial and jugular pulses, and in later years I recognised that the irregularity was due to the dropping out of ventricular beats—i.e., an increase in the heart block. The failure was evidently a myocardial one, for on his recovery the heart became quite regular and the murmurs present were unchanged. He resumed his work, and I detected no further change till March, 1904, when on one of his monthly calls on me I found his heart quite irregular with a disorderly rhythm. Up to this time records of his apex beat and of the jugular pulse had always shown "a" waves—that is, waves due to the left auricle in the apex-beat and to the right auricle in the jugular pulse. On this visit these had disappeared. The mid-diastolic murmur had also disappeared. A week later the heart was again quite regular, the "a" waves had returned to the jugular pulse and to the apex-beat tracings, and the mid-diastolic murmur had returned. This regular rhythm continued until November of that year, when the heart became again irregular, with the disappearance of all evidence of auricular activity—the condition of irregularity now known as auricular fibrillation, but which at that time I called paralysis of the auricle.

There were many other features revealed by this method of observation in this case, to which I need not here refer, as my purpose is to demonstrate certain facts connected with mitral stenosis which have never been clearly appreciated. Thus it is shown that the presystolic murmur appears some time after the causative attack of rheumatic fever; that as the stenosis is progressive its progress is made manifest by the changes in the murmur—first a short presystolic, then a longer presystolic, then a short diastolic which also increases in length. In observing a great many cases I find that these changes vary greatly in the time of their appearance after the causative illness—some, indeed, get a long presystolic and a long diastolic murmur within a few years. Here, then, we have a measure by which we can gauge the rate at which the stenosis takes place—a factor of the very greatest importance in giving a prognosis, especially in relation to heart disease and pregnancy.

In a great many people with mitral stenosis the real danger lies in the coincident changes in the heart muscle. I have notes of the case of a young man with moderate stenosis, but with a slight degree of heart-block, who died from muscle failure of the heart. On post-mortem examination extensive disease was found in the heart muscle. In another, a woman who suffered for years from a heart with a limited response, the mitral stenosis was very slight, but her death was finally precipitated by the onset of auricular fibrillation, and in her the left ventricle was extensively fibrosed.

In addition to these very important changes, it was in mitral stenosis cases that I got the clinical evidence that showed that curious cessation of auricular activity which we now call auricular fibrillation. I had long suspected this, and I set myself to watch individual cases of mitral stenosis, and in a woman whom I attended for 17 years, and who had in 1897 a serious attack of heart failure with marked irregular action, I was able to find all the evidences as in the case just described. Moreover, it was in these cases of mitral stenosis that I was able to recognise the extraordinary difference in the reaction of the heart to drugs of the digitalis group before and after the onset of the irregular action, and that peculiar susceptibility to the action of digitalis in auricular fibrillation which has revolutionised our conception as to the action of the drug.

I think if the reader duly comprehends the significance of these signs he is bound to admit that there has been a great advance in our knowledge in late years. I know that many physicians will probably "pooh-pooh" all these discoveries and tell us they get all the necessary facts from the old teachers, but the intelligent reader will have little difficulty in estimating the value of these protestations.

It will thus be seen that the assessment of a murmur cannot be of any value unless the efficiency of the muscle is taken into consideration. To appreciate the efficiency and the degree of efficiency it is necessary to detect the signs by which an inefficient and impaired muscle is made manifest. It is only in recent years that this matter has been studied, as it is only in recent years the methods by which it could be done have been developed.

Moreover, the manner by which heart failure is brought about and the action of cardiac remedies cannot be understood until we possess a fuller knowledge of the myocardial functions, and it is because we lack this knowledge that I made the statement that an accurate account of the action of digitalis on the human heart has never been published.

My reason for taking part in this correspondence is to show that if clinical medicine is to progress we must not rest content with the complacent notion that the limits of progress have been reached. We must recognise how imperfect is our knowledge of every clinical sign or symptom. Just as we do not know yet how to assess the value of many murmurs, so we are ignorant of the significance of many clinical signs.

Until this is recognised by the profession and a strenuous attempt made to understand the causation and significance of such signs, progress in clinical medicine will be greatly hampered. I am, Sir, yours faithfully,

Harley-street, W., June 29th, 1917. JAMES MACKENZIE.

THE DETECTION OF *ENTAMŒBA HISTOLYTICA* AND ITS CYSTS.

To the Editor of THE LANCET.

SIR,—In your issue of June 30th you publish an article, in the form of a report to the Medical Research Committee, on "The Detection of *Entamœba histolytica* and its Cysts," which calls for a little comment. The author does not refer to the paper published in your journal on April 14th by Dr. R. Donaldson, in which I had the honour of participating, but obviously there is much in common between the methods of both authors. Where, however, the latter author extends beyond the matters dealt with by Dr. Donaldson, he shows some lack of due judgment. Thus he gives instructions for the benefit of bacteriologists who may be tyros at the protozoal examination of fæces. Now perfectly inexperienced workers with the microscope may find these suggestions helpful, though less adequate than most text-books, but such persons must, as he points out, take their instruction at first hand, failing which they should not be in a position to make diagnoses at all. If, on the other hand, the remarks are addressed to those of riper experience in laboratory technique who have to turn their attention to this work, then I deplore the pessimism of the author, who considers that they need to be told to use good lenses and a mechanical stage!

Moreover, I demur at his advice on magnification. I find a ⅓" (8 mm.) objective far the best for routine examination. Used with a × 10 eyepiece this gives more than six times the area of field and 76 per cent. of the magnification of a ½" and × 6 eyepiece as recommended. The use of an orthoscopic eyepiece in place of the usual Huyghenian type greatly increases the field of view in either case. Everyone has his own preferences in these technical matters, and, like most microscopists, I would altogether mistrust the too detailed advice of others of whose *modus operandi* I knew little or nothing. Still, I am glad to notice that he does not mention that bad old idea of lowering the substage condenser to render details more easily visible. Although widely prevalent, it is quite inconsistent with optical theory or sound practice.

The portion of the paper dealing with staining the preparation treats, but without further profit, ground already covered in detail by Dr. Donaldson. Indeed, by the use of carbol fuchsin one great advantage of the earlier method is lost—namely, the diffused colour of the background, for the débris absorbs all the stain, leaving the field practically decolourised. If a saline emulsion be simply tinged with a little strong eosin, as good a differentiation of cysts (white on a red field) is obtained as with this carbol fuchsin and blue light. Neither method rids one of the confusion of other uncoloured objects, such as triple phosphate crystals; neither method aids the differentiation of the two types of cyst, and when doubt arises recourse must be had to iodine. In the previously quoted paper a certain mixture of iodine and eosin or rubin is advocated as the regular routine preparation for emulsification of fæces. Iodine *must* be used in doubtful cases, but two objections have been urged against its use in the first instance: firstly, that it agglutinates the fæces and so obscures the cysts. This is, I am sure, largely imaginary, since observation shows that not one specimen in 20 agglutinated with the strong iodine-rubin mixture, and, moreover, this solution will show up cysts even in unemulsified portions of fæces mounted in it.

The second argument is that it kills, and therefore obscures, free-living amœbæ and flagellates. In both cases, nevertheless, the sharply defined outline of the fixed organism at once attracts notice, and the absorption of stain actually enhances its visibility in many cases. Where acute symptoms are present final reference will always be to a saline preparation for the detection of living amœbæ; but I wish to emphasise that the primary use of a stained preparation does not exclude them. For military purposes the diagnosis of flagellates is of lesser importance, since almost all physicians agree in ignoring them.—I am, Sir, yours faithfully,

R. C. MCLEAN.

Pathological Laboratory, No. 1 War Hospital, Reading, July 4th.

ON SKIN-GRAFTING.

To the Editor of THE LANCET.

SIR,—The authors of the paper on the above subject in your issue of July 7th have apparently overlooked an article which appeared in THE LANCET of Nov. 25th, 1899, in which I described a method of skin-grafting in many respects resembling that which they describe and which aims at covering a raw surface with something firmer and less likely to contract than the ordinary Thiersch grafts.

I am, Sir, yours faithfully,

Upper Wimpole-street, W., July 7th. THOS. H. KELLOCK.

WAR HEART.

To the Editor of THE LANCET.

SIR,—The variety of war heart described by Colonel A. E. Garrod in your issue of June 30th is of great interest. Its occurrence in cases of malaria, dysentery, and trench fever, and the nature of the physical sign described, prompt me to refer to a similar condition found in another epidemic disease—viz., diphtheria. Colonel Garrod states that "the physical sign is an extension of the cardiac dullness towards the right, often to 1½ or 2 inches beyond the mid-sternal line. Only in extreme cases is there any conspicuous extension toward the left." This sign is also of frequent occurrence during the course of diphtheria, and in my experience is never absent in cases showing definite evidence of post-diphtheritic paralysis. The increase beyond the right margin of the sternum very often precedes the onset, and always accompanies the appearance of the well-known forms of diphtheritic palsy. If the latter be severe and extensive the dullness to the left is also increased and is of serious omen. In a paper read before our local medical society in 1908 I ventured to describe these right and left extensions as the "distant" and "near" danger signals respectively of the heart condition. These measurements of the deep cardiac dullness are of great prognostic value, and, as in the cases described by Colonel Garrod, give definite guidance, not only as to the need of rest, but also as to how long it should be continued. Why the right side of the heart dilates earlier than the left in these toxic states is an interesting question, and one to which I do not remember having seen a sufficient answer.

As one who had the privilege of working under the late Dr. D. B. Lees, I am glad to see the reference to his teaching and methods. He emphasised the importance of light finger percussion, of frequent (daily) mapping-out and measurement, and the careful keeping and comparison of records in the study of dilatation of the heart chambers in conditions of disease.—I am, Sir, yours faithfully,

Cardiff, July 2nd, 1917. ALFRED HOWELL, M.D. Lond.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. J. E. Brydon, R.A.M.C., attached Yorkshire Regiment, qualified at Edinburgh in 1908, and had held appointments at the Bristol Children's Hospital and at the Darlington Hospital. Before joining the R.A.M.C. in the early part of 1915 he was in practice at Chagford, Devon.

Major W. G. Porter, M.B., B.Sc., F.R.C.S. Edin., D.S.O., who was acting as a combatant officer, qualified at Edinburgh in 1906, in which city he was a well-known ear, nose, and throat surgeon, and held several hospital appointments. When war broke out he held captain's rank in the Royal Field Artillery Territorial Force, and in the autumn of 1915 he went on active service in France. The award of the D.S.O. was gazetted early in June this year.

Accidentally Drowned.

Lieut. F. Whincup, R.A.M.C., was a student at St. Bartholomew's Hospital, London, and qualified in 1897. He had held appointments at the Shropshire and Mid Wales Eye, Ear, and Throat Hospital, at the Stroud Hospital, and at the Devon and East Cornwall Hospital, Plymouth. Prior to joining the R.A.M.C. he was in practice at Shrewsbury where he was physician to the Royal Salop Infirmary, and medical officer to the Post Office and Board of Education. He was accidentally drowned in France.

Died.

Capt. A. L. M. Churchill, R.A.M.C., attached London Regiment, was a student at Westminster Hospital, and qualified in 1895. After holding appointments at Wonford Hospital and at the County Asylum, Lancaster, he practised at Mevagissey, Cornwall, and joined the R.A.M.C. towards the close of the year 1914.

Lieut. A. Atkinson, R.A.M.C., was educated at Leeds, and qualified in 1884. He held the appointment of house surgeon at Leeds General Infirmary, and was in practice at Harringay, London, before joining the R.A.M.C.

Wounded.

Capt. L. R. Meech, M.C., R.A.M.C.
Capt. R. L. Kenihan, Australian A.M.C.
Major H. D'A. Beumberg, R.A.M.C., attd. Liverpool Regt.
Capt. R. Johnson, R.A.M.C.
Capt. F. A. Hampton, R.A.M.C., attached Royal Scots.
Capt. H. Young, R.A.M.C.
Lieut. J. Berry, New Zealand M.C.
Capt. E. A. Walker, R.A.M.C.
Major L. W. Bond, Australian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Second Lieut. C. W. Goodall, South Staffordshire Regiment, killed in action, second son of Dr. E. W. Goodall, of the North-Western Hospital, Hampstead, London.

Second Lieut. C. C. Lucas, Northants Regiment, killed in action, youngest son of the late Dr. R. C. Lucas, of West Lavant, near Midhurst, Sussex, and of Wimpole-street, London.

Capt. B. R. Poole, Canadian Army Veterinary Corps, killed by a shell whilst on duty with the Railway Corps, youngest son of Surgeon-Major Poole, Bengal Medical Service.

Second Lieut. J. E. Power-Clutterbuck, Royal Field Artillery, attached Royal Flying Corps, killed in action, only son of the late Surgeon-Major E. R. Power, A.M.S.

Second Lieut. J. MacH. Crombie, Royal West Kent Regiment, died of wounds received in action, youngest son of Dr. J. Crombie, of Sidcup, Kent.

MENTIONED IN DESPATCHES.

In a despatch received from General Sir Archibald Murray describing the operations undertaken by the Egyptian Expeditionary Force from October, 1916, to February, 1917, the names of the following medical officers are mentioned for gallant or distinguished conduct in the field or for other valuable services :—

Staff.—Maj. H. V. Bagshawe, R.A.M.C.; Maj. R. H. Bridges, R.A.M.C.; Capt. G. Dalziel, R.A.M.C., Spec. Res.; Lt.-Col. E. J. R. Evatt, R.A.M.C.; Capt. A. S. M. Macgregor, R.A.M.C. (T.F.); Col. C. J. MacDonald, A.M.S.; Col. (temp. Surg.-Gen.) J. Maher, A.M.S.; Lt.-Col. (temp. Col.) O. L. Robinson, R.A.M.C.; Col. M. J. Sexton, A.M.S.; Maj. G. C. Taylor, R.A.M.C.

R.A.M.C.—Capt. (temp. Maj.) J. Aitken; Capt. J. A. H. Aitken; Capt. C. H. Allen; Temp. Capt. P. H. Bahr; Capt. L. B. Baird; Capt. F. S. Bedale; Temp. Lt. F. J. H. Begg; Capt. M. Brennan; Capt. A. E. Bullock; Capt. (temp. Maj.) O. C. P. Cooke; Temp. Lt. F. W. Davidson; Capt. J. Davidson; Capt. H. R. Dive; Maj. (temp. Lt.-Col.) M. Dunning; Maj. (temp. Lt.-Col.) J. Evans; Temp. Maj. A. R. Ferguson; Capt. W. T. Gardiner; Capt. (temp. Maj.) W. W. Greer; Capt. A. A. Gunn; Temp. Lt. A. E. Harrisson; Maj. (temp. Lt.-Col.) R. B. Hole; Lt.-Col. A. Hosie (ret.); Capt. J. Inglis; Maj. C. Kerr; Temp. Capt. H. V. Leigh; Temp. Capt. F. J. McGlade; Temp. Capt. R. B. F. McKail; Capt. W. F. Mackenzie; Capt. A. A. McWhan; Lt.-Col. W. R. Matthews; Capt. W. H. Milligan; Maj. (temp. Lt.-Col.) H. T. Samuel; Lt.-Col. G. Scott (ret.); Capt. C. F. Searle; Capt. A. F. B. Shaw; Temp. Capt. H. P. Sheppard; Temp. Capt. H. E. S. Stiven; Capt. O. Teichmann; Lt.-Col. H. W. Thomson; Capt. W. T. Torrance; Capt. W. W. Treves; Maj. (temp. Lt.-Col.) G. A. Troup; Capt. P. S. Vickerman; Capt. R. G. Walker; Capt. A. P. Watson; Capt. T. Young.

Australian A.M.C.—Capt. W. Evans; Lt.-Col. W. A. Fraser; Lt.-Col. R. Macdonald.

New Zealand M.C.—Capt. (temp. Maj.) C. E. Hercus; Lt.-Col. C. T. H. Newton; Capt. R. L. Withers.

I.M.S.—Maj. R. W. Knox; Maj. T. C. Rutherfoord; Capt. R. B. S. Sewell; Lt.-Col. A. J. Willcocks.

Order of St. John of Jerusalem.—Dr. A. Granville, C.M.G.

Civil Departments, &c.—Dr. J. Warnock.

THE CANADIAN HOSPITAL, ORPINGTON.—On July 5th Mr. Walter Long, Secretary of State for the Colonies, opened an extension of the Ontario Military Hospital at Orpington. Like the original institution, the extension is the gift of the province from which the hospital takes its name, but it is open to wounded men of all branches of the Army of the Empire. When started in February, 1916, the hospital had an accommodation for 1040 beds, but this has now been doubled. A statement by Lieutenant-Colonel Macpherson, the Commandant, showed that during the past 12 months 8129 men had been treated, of whom more than half were inhabitants of the British Isles, 2943 of Canada, and 576 of Australia.

THE DEPLETION OF HOSPITAL STAFFS.—Mr. Cosmo Bonsor, the president of Guy's Hospital, has on behalf of the governors of the hospital drawn the attention of Lord Rhondda, then President of the Local Government Board, to the difficulties in which hospitals with medical schools were likely to be placed unless steps were taken to prevent the further depletion of their staffs; he pointed out that the closure of important departments was imminent and would be very serious in consequence. Lord Rhondda replied, hoping that the provisions of the Military Service Act, 1916, would prevent any undue hardship to hospitals, and considered that the Committee of Reference of the English Royal Colleges, acting in conjunction with the Central Medical War Committee, would be able to meet the needs of the Army without unduly restricting hospital service. No member of a hospital staff is taken until his case has been considered by the Committee of Reference.

KING GEORGE'S FUND FOR SAILORS.—This Fund, which has for its president Prince Albert and for its chairman the Duke of Connaught, has been established on the same lines as King Edward's Hospital Fund for London, in the interests of seamen of the Royal Navy and mercantile marine and their families. All institutions, including hospitals, which are supported wholly or in part by public contributions for the benefit of seamen will receive aid from the Fund. From July 22nd to 28th, "Navy Week," the leaders of the stage and the cinema industry have arranged a special programme in aid of the Fund, the offices of which are at Trinity House, Tower Hill, E.C.

OBITUARY OF THE WAR.

LEWIS EMERSON CLARK, M.D. McGILL,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Lewis Emerson Clark, who was killed in action on the Western front on the morning of June 7th, at the age of 29 years, was son of Mrs. C. F. Clark, of Vancouver, and was born at Ellsworth, Kansas, U.S. His family going to Canada, he entered McGill University, graduating in medicine in 1913, and spending the following years as interne at the Montreal General Hospital. He was then attached for short periods to the Women's Hospital and to the Royal Victoria Hospital, Montreal, and for the major part of a year prior to joining the C.A.M.C. was engaged as ship's surgeon. Arriving in England in June, 1916, he was in the following month

transferred to France to the 2nd Canadian General Hospital, and after service at this and the 2nd Canadian Stationary Hospital, was early this year made R.M.O. of a battalion, where his cheery disposition and capacity for dealing with men made him very popular. Captain Clark was unmarried.

OWEN HAIRSINE, M.R.C.S. ENG.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain O. Hairsine, who was killed in action on June 7th, at the age of 26 years, was youngest son of Herbert S. Hairsine, of West Hampstead. Educated at Tonbridge and the Middlesex Hospital, he qualified in 1914, and took a commission in the R.A.M.C., Special Reserve. He was in the retreat from Mons, being mentioned in despatches and receiving the Military Cross a year later. He had more than one narrow escape in the early days of the war when the dressing stations in which he was working were under shell fire, and his death, which occurred while he was bringing in a wounded man from the open, was instantaneous. His colonel wrote of him as a man of great value to the ambulance. Captain Hairsine was married a year ago.



FREDERICK WILLIAM HENRY DAVIE HARRIS, M.R.C.S. ENG.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel F. W. H. D. Harris, whose sudden death occurred last month, was elder son of the late Commander W. H. Harris, R.N., and was educated at the Royal Naval School, New Cross. He completed his medical studies at University College, London, in 1880, and entered the R.A.M.C. five years later. He served for 20 years, dividing his time between India and Egypt. After the Boer War he received the King's and Queen's medals with clasps, being present at Stormberg and other engagements. For three years he was adjutant of the R.A.M.C. at Aldershot. On retiring in 1905 he was medical officer to the depôt at Bodmin, resigning that appointment to take up the secretaryship of the R.A.M.C. benevolent funds in London. At the outbreak of the present war he became the secretary of the Auxiliary R.A.M.C. Funds, which he assisted in establishing. He was also medical officer to the Army Clothing Department in London, and honorary treasurer to the R.A.M.C. Comforts Fund. He discharged his various duties almost up to the time of his death, his illness lasting a bare fortnight. A good comrade, a sportsman, and a sound man of business, his death will be regretted by numerous friends in all branches of the Army.



Colonel Harris leaves a widow, daughter of the late Major J. H. King, Royal Scots Greys, and two sons, both of whom are in the Army.

HENRY HAROLD ROBINSON, D.S.O., M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. H. Robinson, who was drowned when the transport *Transylvania* was torpedoed in the Mediterranean on May 4th, at the age of 40, was the younger son of H. Robinson, of Manchester. He was educated at Owens College, Manchester, qualifying in 1899, when he occupied resident appointments at Burton-on-Trent and Southport Infirmaries. He then settled in practice in Birkenhead, where he became honorary medical officer to the Birkenhead Children's Hospital, and an active member, sometime president, of the Birkenhead Medical Society. Although opposed to the principles of the National Health Insurance Act, when the Act became law he served on the panel and worked to the best of his ability to ensure its success. A fellow practitioner writes of Captain Robinson: "His loss means much to many. His patients lose his ever-ready and skilful aid, his colleagues an honourable practitioner of attractive brightness, his fellow townsmen one continually ready to do the best required of him. Brave, unselfish, and with a high sense of duty, he was beloved by his men in the Army, and held in high regard by his superior officers." Captain Robinson married in 1905 the daughter of the late J. C. Wann, J.P., and leaves a widow and two children. He was a contributor to the columns of THE LANCET.



DOUGLAS REID KING, M.B., CH.B. GLASG.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain D. R. King, who was killed in action on June 7th, was the fourth son of the late John King, of Helensburgh and Cove, and was educated at Larchfield School. He studied medicine at Glasgow University, where he was a gold medallist, graduating M.B. and Ch.B. in 1914. Having entered the Special Reserve of the R.A.M.C. as lieutenant, he joined for duty on Sept. 15th, 1914. He was mentioned in despatches in 1915 and received the Military Cross on June 3rd, 1917, four days before his death.



ANDREW VICTOR HONMAN, M.B., CH.B. MELB.,

MAJOR, AUSTRALIAN ARMY MEDICAL CORPS.

Major A. V. Honman, who was killed in France on May 20th, at the age of 26 years, was the son of Dr. Andrew Honman, one of the leading medical practitioners at Melbourne. He had a distinguished career at Melbourne University, graduating with honours in December, 1912. Volunteering for service on the outbreak of war, he left with the 2nd Australian Field Ambulance in October, 1914. With this unit he served at Gallipoli, and for good work at Suvla in August, 1915, was mentioned in despatches. At the time of his death he had been serving in France for about 12 months. Major Honman was by nature quiet and unassuming; he was much respected by his men for coolness and steadiness under fire and in difficult places. His loss will be keenly felt by many University and Service friends.

Obituary.

WILLIAM GEORGE TOTTENHAM POSNETT, F.R.C.S. IREL.

Mr. W. G. T. Posnett, whose death took place on June 17th at the early age of 46, had served both as civil and military surgeon in a variety of capacities. At Bloemfontein during the Boer War he was one of the operators at No. 8 General Hospital, performing there over 600 major operations. During the previous Zulu campaign he held a commission as surgeon-captain. Offering his services in August, 1915, to the French Red Cross, he served at Yvetôt for more than two months and received the warm recognition of the French Medical Service. In July, 1916, he was appointed by the War Office to examine recruits. He was then in the best of health, but often spoke of the bad ventilation and insanitary state of the recruiting stations. About Christmas-time he began to have fluctuations of temperature which he attributed to malaria. Gradually loss of weight, cough, and hoarseness necessitated treatment. A consultation on March 13th of two eminent specialists resulted in a diagnosis of tuberculous laryngitis and both lungs also affected.

Dr. Arthur Ransome, his father-in-law, who has sent us the details of Mr. Posnett's illness, writes that the extreme virulence of the infection was shown by the rapidity of its progress, and that he has drawn the attention of the medical officers of the London County Council and the Local Government Board to the risks their officers are running under the conditions prevailing at the recruiting stations.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

W. P. Tew, C. de C. W. Langdon, W. L. Denny, J. J. Keatley to be temporary Surgeons.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. A. J. Gilbertson to be Staff Surgeon.
P. G. Fildes to be temporary Honorary Staff Surgeon.

ARMY MEDICAL SERVICE.

Col. O. R. A. Julian, C.B., C.M.G., to be temporary Surgeon-General.

ROYAL ARMY MEDICAL CORPS.

Temp. Col. W. Hunter (Capt., R.A.M.C., T.F.) reverts to the rank of temporary Lieutenant-Colonel on re-posting.

Lieut.-Col. (Temp. Col.) O. L. Robinson, C.M.G., relinquishes his temporary rank on re-posting.

To be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: Lieut.-Col. A. G. Thompson, Bt. Col. Thomas W. Gibbard.

Majors relinquishing the acting rank of Lieutenant-Colonel on re-posting: A. M. Rose, D. P. Watson, R. C. Wilmot.

Temp. Major W. Bapty, Canadian A.M.C., to be temporary Major.

Capt. F. C. Davidson to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Temp. Capt. R. Wilson to be temporary Major whilst in command of Troops on a Hospital Ship.

Temp. Capt. W. L. Maclean, Canadian A.M.C., to be temporary Major.

The undermentioned are granted temporary honorary rank whilst employed with No. 22 General Hospital:—As Major: K. Emerson. As Captains: F. Brigham, F. J. Caldwell, P. Gustafson, D. E. Ford. As Lieutenants: C. N. Lewis, W. S. Ramsey, L. M. V. Stone, D. J. Knowlton, G. W. Cottis.

Temporary Lieutenants to be temporary Captains: H. F. Ferguson, D. Gaston, H. M. Gray, K. Elmes, J. J. Shannon, A. Morton, T. S. Paterson, J. L. Torley, D. McLaren, W. W. Morrison, M. M. Frew, N. H. Smith, N. M. Cummins, G. Fehrsen, G. T. Garraway, R. H. Fleming, W. N. Montgomery, J. S. Kinross, C. E. Wise, F. W. Clark, J. Jaffé, J. R. P. McLaren, L. M. Davis, O. C. M. Davis, J. Cross, J. Glaister, Z. A. Green, H. R. Tighe, T. W. Bailey, J. G. Forbes, R. O. Lee, D. H. A. Galbraith, S. F. Harris, C. R. Reckitt, J. W. Thomas, W. S. King, T. O. Robson, A. E. Burroughs, J. A. Giles, H. S. McSorley, G. B. Archer, B. W. Mosher, L. W. Jones, H. J. C. Gibson, J. A. Edmond, E. J. Mannix, E. Lanzon, J. D. W. Beavis, E. Kennington, R. B. Bryan, J. F. Penson, G. O. Hutchinson, A. W. McGregor, C. Harris, H. C. A. Haynes, W. G. Johnson, B. C. Haller, S. N. Babington, A. Finlay, H. A. Colwell, J. E. McMillan, L. Blake, H. J. Davidson, W. H. Harvey, L. ap I. Davies, H. L. Shelton, V. L. Connolly, W. Steadman, E. V. Beaumont, H. F. Wilson, A. E. Gravelle, A. J. Bennee, W. P. H. Lightbody, J. C. Macaulay, J. A. Paterson, H. D. Gasteen, E. S. Molyneux, F. J. McCarthy, G. E. Chissell, J. T. Lloyd, S. Rodin, E. L. Steele, C. S. Tennant, I. Vandandaigue, F. R. Fraser, T. G. Elsworth, G. B. Bartlett, G. H. Culverwell, C. S. Thomson.

Officers relinquishing their commissions: Temp. Capts. H. A. G. Hadden (on account of ill-health, and is granted the honorary rank of Captain), A. E. Moore, S. H. M. Neave; Temp. Lieuts. W. A. Murray, E. E. Bryans, R. D. L. Greene, A. Campbell, P. L. Blaber, J. A. Hope, R. H. C. O. Wisdom, A. A. Halliday, J. Devine, S. F. Floyd, J. Crean, A. G. L. Smith, J. F. Walsh, A. P. Gibbons, J. B. McMorland, G. B. Ferguson.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: L. J. Vincent, from University of London Contingent, O.T.C.; M. F. Murphy, from Royal College of Surgeons in Ireland Contingent, O.T.C.; J. Wilson, from Queen's University, Belfast Contingent, O.T.C.

Capt. S. J. Henderson relinquishes his commission on account of ill-health.

TERRITORIAL FORCE.

Major E. H. Cox to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Major R. J. W. Oswald to be Lieutenant-Colonel on the permanent personnel.

Capt. (acting Lieut.-Col.) W. P. Ferguson relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. G. S. Williamson to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Captains seconded for duty with a General Hospital: J. A. Innes, A. E. Campbell, F. G. Stuart, W. Alexander, A. A. McKenzie, A. J. Campbell, N. Hodgson, D. Cameron, J. Chalmers, E. McM. Dunlop, A. C. Hepburn, D. Campbell, J. W. Anderson.

Capt. A. W. Nuthall is seconded whilst holding a temporary commission in the R.A.M.C.

Lieutenants (temporary Captains) to be Captains: E. B. Kitching, J. W. Craven.

Lieut. H. Evers to be Captain.

R. T. Pearl to be Lieutenant.

Attached to Units other than Medical Units.—Major H. W. Williams to be acting Lieutenant-Colonel whilst commanding a Casualty Clearing Station; Capt. W. T. Rowe, from Army Medical Service, to be Major, and is seconded for duty with a General Hospital.

URBAN VITAL STATISTICS.

(Week ended July 7th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·2, against 12·4 and 11·7 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 10·4, or 0·9 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 3·3 in Ilford, 4·2 in Hastings, and 4·7 in Gillingham to 19·1 in South Shields, 19·8 in Wakefield, and 22·0 in Carlisle. The principal epidemic diseases caused 285 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 114 from measles, 60 from infantile diarrhœa, 44 from whooping-cough, 32 from diphtheria, 11 from enteric fever, and 4 from scarlet fever. The deaths from measles showed a further decline compared with the numbers registered in the five preceding weeks, and caused the highest annual rates of 1·7 in St. Helens, 1·8 in Stockton-on-Tees, 2·3 in Walsall, 2·6 in Darlington, and 3·2 in Middlesbrough. The 642 cases of scarlet fever and the 1061 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 36 and 10 above the numbers remaining at the end of the previous week. Of the 3629 deaths from all causes in the 96 towns 128 resulted from violence. The causes of 28 deaths were uncertified, and included 6 in Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was 13·0, against rates steadily declining from 17·0 to 13·6 per 1000 in the seven preceding weeks. The 292 deaths in Glasgow corresponded to an annual rate of 13·6 per 1000, and included 17 from whooping-cough, 16 from measles, and 4 from infantile diarrhœa. The 72 deaths in Edinburgh were equal to a rate of 11·3 per 1000, and included 2 from whooping-cough and 1 each from diphtheria and infantile diarrhœa.

Irish Towns.—The 116 deaths in Dublin corresponded to an annual rate of 15·2, or 3·2 per 1000 above that recorded in the previous week, and included 3 from whooping-cough, 2 from infantile diarrhœa, and 1 each from enteric fever and measles. The 92 deaths in Belfast were equal to a rate of 12·2 per 1000, and included 2 from measles and 1 each from whooping-cough, diphtheria, and infantile diarrhœa.

THE Minister of Pensions has appointed Colonel Sir John Collie, R.A.M.C., to be Director of Neurasthenic Institutions.

DUBLIN UNIVERSITY MEDICAL SCHOOL AND THE WAR.—Speaking at a meeting held in aid of the Dublin University Voluntary Aid Hospital last week, Professor A. F. Dixon, dean of the medical school, quoted interesting figures as to the part played by past and present students of the School of Physic in the war. About 900 past or present students were employed in one or other of the services of the Crown. Since June, 1913, 199 men of Irish or British birth had qualified from Dublin University, and of these 196 had volunteered for service. In addition, 175 medical students had volunteered without waiting to qualify. Of the women graduates 7 were serving with the Royal Army Medical Corps. The records of honours showed that 135 past students of the School of Physic had been mentioned in despatches, 47 had been awarded the Military Cross, 2 had received bars to the Military Cross, 31 had received the Distinguished Service Order, 11 had received the honour of C.M.G., 10 of C.B., 1 of K.C.B., 1 of C.I.E., and 5 had received foreign decorations. The record is very remarkable and is in keeping with the great traditions of Trinity College.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

PRIMARY EXAMINATION, PART II.

Physiology.—R. G. Addenbrooke, Birmingham; D. R. Ainsworth, Manchester; C. C. Becker, Guy's Hospital; B. C. Betts, Manchester; S. Blackman, London Hospital; J. P. Brown, Liverpool; C. E. G. Busbridge, University College Hospital; M. D. Cadman, St. Thomas's Hospital; G. W. Cheater, King's College; L. C. F. Chevens, St. Thomas's Hospital; G. L. Clements, Birmingham; A. R. Crane, London Hospital; D. A. Dias, Liverpool; A. G. Duncan, London Hospital; A. H. Hall, Birmingham; R. R. Halsall and G. R. D. Hankinson, Manchester; M. C. Hartley, London Hospital; A. Hesselberg, Liverpool; D. Hunter, London Hospital; E. T. Lloyd, Guy's Hospital; F. J. M. Larkins, Liverpool; G. P. Lindsay, Guy's Hospital; F. Lockwood, Liverpool; H. A. Lomax, Manchester; I. B. McCann, Guy's Hospital; M. S. Mahmud and G. P. Monk, Liverpool; C. F. Newman, Birmingham; E. G. Parkinson, Manchester; H. A. Potter, Middlesex Hospital; P. L. Richardson, Guy's Hospital; L. Samuels, Manchester; W. H. Summerskill, Guy's Hospital; M. Tree, London Hospital; W. H. Turner, Guy's Hospital; A. Williams, Bristol; D. C. Williams, London Hospital; E. F. Wilson, Guy's Hospital; G. A. P. Wright, Bristol; S. Wright, Middlesex Hospital; and J. E. Zeitlin, London Hospital.

Anatomy.—D. R. Ainsworth and B. C. Betts, Manchester; S. Blackman, London Hospital; H. Brown and J. P. Brown, Liverpool; C. E. G. Busbridge, University College Hospital; M. D. Cadman, St. Thomas's Hospital; G. W. Cheater, King's College; L. C. F. Chevens, St. Thomas's Hospital; G. L. Clements, Birmingham; D. A. Dias, Liverpool; A. G. Duncan, London Hospital; A. H. Hall, Birmingham; G. R. D. Hankinson, Manchester; M. C. Hartley, London Hospital; A. Hesselberg, Liverpool; D. Hunter, London Hospital; W. T. Johnson, Birmingham and Middlesex Hospital; M. A. R. Khalifa and E. T. Lloyd, Guy's Hospital; F. J. M. Larkins, Liverpool; G. P. Lindsay, Guy's Hospital; F. Lockwood, Liverpool; H. A. Lomax, Manchester; I. B. McCann, Guy's Hospital; G. P. Monk, Liverpool; H. A. Nathan, King's College; H. A. Potter, Middlesex Hospital; J. G. Reed, St. Thomas's Hospital; L. Samuels, Manchester; W. H. Summerskill, Guy's Hospital; M. Tree, London Hospital; A. A. Weinger, King's College; D. C. Williams, London Hospital; E. F. Wilson, Guy's Hospital; S. Wright, Middlesex Hospital; and C. F. Young and J. E. Zeitlin, London Hospital.

UNIVERSITY OF ABERDEEN: INSTALLATION OF THE CHANCELLOR AND SUMMER GRADUATION.—On Friday, July 6th, the installation of the Duke of Richmond and Gordon, as Chancellor of the University of Aberdeen was held in Marischal College, the summer graduation being held at the same time. The proceedings were characterised with greater quietness on part of the students than is usually the case, and the ceremony was simple as befitted the times. The hall, however, was well filled, and there was a full attendance of the University staff. The Lord Provost and magistrates were also present. After taking the oath of fealty to the University, the new Chancellor took his place in the chair, and as the graduates in arts, science, and medicine were presented he capped and shook hands with each. The inaugural address was afterwards delivered. The following degrees in medicine were conferred:—

DEGREE OF DOCTOR OF MEDICINE (M.D.).

James Matthews Duncan and Robert Richards.

DEGREES OF BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (CH.B.).

John Wilson Bowman, Frederick William Carter (distinction), Charles Alexander Harvey, Benjamin Wignall Jones, Duncan William MacKay, Acbyuta Menon Mannatazhat, Arthur Young Milne, George Fowler Mitchell, Andrew George Reekie, Charles Reid (second-class honours), James Maxwell Savege, James Innes Watson, Charles Mayfield Wood, and William Lyall Yell (distinction).

The John Murray medal and scholarship, given to the most distinguished graduate (M.B.) of 1917, was awarded to George Reid McRobert.

UNIVERSITY OF GLASGOW.—At examinations held recently the following candidates passed in the subjects indicated:—

DEGREES OF M.B. AND CH.B.

(*M*) *Materia Medica and Therapeutics*, (*P*) *Pathology*, (*M.J.*) *Medical Jurisprudence and Public Health.*—John Smith Aitken, M.; Carl Otto Anderson, P.; John David Arthur, P.; Alexander Kidd Begg, M.; Alexander Shanks Bisset, P.; William George Burns, P.; James Caddies, M., P.; William James Simon Cameron, P.; Thomas Watson Carstairs, P.; John Gilchrist Coltart, M., P.; Harold Livingstone Coulthard, P.; Andrew Murdoch Davidson, P.; John Donald, P. (distinction); William Edgar, P.; Matthew Forsyth Gibson, M., P.; George Osmond Grant, P.; John Hewitt, M., P.; Humphrey Josh Hollis, P.; Robert Gold Howat, M., P.; John Alexander Jenkins, M.; Samuel Himow Wolf Kamerasse, M., P.; John Kirk, P., M.J.; Archibald Campbell Lindsay, M., P.; Robert M'Courtney, P., M.J.; Donald Maclean, P.; Findlay Kerr Macmillan, P.; Allan Watt M'Rorie, P.; Robert Mair, M., P.; John M'Kean Maxton, M., P.; John Spence Meighan, P.; Modiri Silas Molema, M., P.; James Bennie Morrison, M., P.; Bryce Frood Niblock, P.; John Nicol, P. (distinction); John William Peden, P.; John Pollock, M., P.; James Morrison Ritchie, P.; William Scotland, M.; Herbert Harold Spencer, P.; Noel Eustace Stone, M., P.; John Brunton Sweet, M.; John Leonard Turpie, M.; James Alexander Walls, P.; Robert Kennedy Watt, M., P.; Robert Young, P.; and Stephen Young, M.

Women:—Helen Frances Allinson, P.; Susan Struthers Bryce, M., P.; Elizabeth Pace Cameron, M., P. (distinction); Mary Turner Liddell Clark, M., P. (distinction); Emily Loudon Clow, M., P.; Veronica Catherine Jessie Davies, M., P.; Edith Dennistoun Dobbie, P.; Charlotte Ann Douglas, M., P.; Margaret Hogg Grant, P.; Helen Hogg, M., P.; Alison Mary Hunter, P.; Alice M'Elwee, M., P.; Alice M'Glashan, M., P.; Annie Isabel Christian Maclardy, M.; Margaret Elizabeth MacLaren, M., P.; Mabel Mary Maclean, M., P.; Caroline Jane Maclennan, M., P.; Agnes Hislop Macwhirter, M., P.; Georgina Murdoch, M., P.; Kathleen Nicol, P.; Margaret Mitchell Paterson, M., P.; Louisa Evelyn Pigeon, M., P.; Helen Lennie Ralston, M., P.; Margaret Nelson Robertson, P.; Elaine Bessie Stuart Stocquart, M., P.; Muriel Amy Stowe, M., P.; Jean Banks Thomson, M., P.; Marion Thomson, M., P.; and Helen Barr Wilson, M., P.

New Medical Ordinance.—The following passed in Medical Jurisprudence and Public Health of the Fourth Professional Examination (in addition to the candidates under the Old Regulations named in the foregoing list):—

William Barras, Malcolm Chalmers, Kenneth John Alexander Gillanders, Edward Porteous Irving, Arthur Kennedy, Vida Johnston Perry, Ian Menteith Robertson, and John Joseph Robertson.

Lieutenant-Colonel G. Sims Woodhead, R.A.M.C.T., will give an address on Farm Colonies for the Tuberculous at the annual meeting of the National Association for the Prevention of Consumption to be held in the hall, 20, Hanover-square, London, W. 1, on Monday next, July 16th, at 5 P.M.

IN the winter session of 1916–17 there were 794 women studying medicine at the Prussian Universities, as against 705 in the corresponding session a year ago.

DONATIONS AND BEQUESTS.—By will the late Mr. Charles William Ware, of Ripon, Yorks, left, subject to a life interest, £4000 to the British Home and Hospital for Incurables, Streatham. The residue of the estate will go to the Royal Victoria Infirmary, Newcastle.

ANTI-MOSQUITO MEASURES IN CALCUTTA.—In a paper read at a recent meeting of the Calcutta Health Committee Dr. C. A. Bentley, Sanitary Commissioner for Bengal, emphasised the urgent necessity of controlling malaria in Calcutta, and of reducing the danger from all kinds of mosquito-borne diseases. He advocated the formation of a permanent anti-mosquito department to ascertain the prevalence of mosquito-borne diseases and educate public opinion in regard to the mosquito danger by a properly organised publicity campaign.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Experiments on Living Animals.

ON the motion of Mr. BRACE, the Under Secretary at the Home Department, there has been ordered a return showing the number of experiments on living animals during the year 1916 under licences granted under the Act, 39 and 40 Vic., c. 77, distinguishing the nature of the experiments.

Military Service (Review of Exceptions) Act.

The Select Committee of the House of Commons which is inquiring into the working of the Military Service (Review of Exceptions) Act particularly in relation to medical examinations is continuing the taking of evidence. Mr. SHORTT is the chairman of the Committee.

On Thursday, July 5th, Colonel Sir J. BLAND-SUTTON, a member of one of the special medical boards and senior surgeon of the Middlesex Hospital, gave evidence. He dealt with the work of the special medical board, whose function it was to examine cases in which differences of opinions existed between medical recruiting boards on the one hand and the private medical advisers of the recruit or the specialists whom he had consulted on the other. Since October of last year until the present time the special board had examined 3449 men. In 289 cases the classification was raised, in 1202 it was confirmed, and in 1958 it was lowered. The 1958 contained 336 cases where the man was rejected for service altogether. He thought that it might be asserted that about 3 per cent. of the medical certificates produced by recruits might be described as not quite *bona fide*. He considered as serious the proportion of cases in which classifications had to be lowered by the special medical board. He regarded the 336 rejected cases as showing a seriously large percentage of error. He could not say whether the decisions of the medical boards with which the special board disagreed were formed too hurriedly or under great pressure of work. In cases where the special board had raised the classification it might be that the condition of the recruits might be improved since their examination by the ordinary medical boards. The principal complaints for which the special board had decided to reject men were epilepsy 48, mental deficiency 29, tuberculosis 62,

heart disease 917, and kidney disease 18. In reply to questions relating to the relative value of medical certificates placed before the board, Sir J. Bland-Sutton said that the family doctor generally made a dogmatic statement that a patient had some specific ailment and was unfit for military service, and that the certificates given by specialists were, as a rule, all verbiage and meant nothing, and the men paid double the ordinary fee for them.

Mr. PRINGLE brought to the notice of the witness the statement that a man fit to do work in civil life was fit to do some work in the Army.

Sir J. BLAND-SUTTON replied that he was unable to accept that principle without qualification. A man with a weak heart might make a fortune as a stockbroker, but if he were put in the Army he would drop down dead from exertion. Cases of that sort had occurred. He went on to say that if the special medical board found that a very glaring error had been committed by a medical recruiting board the president of the special board drew attention to it by a note on the back of the paper relating to the case. He also mentioned that when the special board passed a man for service in a particular class they did it on the assumption that he would be so employed.

Colonel LEWTAS, I.M.S. (retired), the president of No. 2 travelling medical board, gave evidence as to his experience with the medical examination of 35,000 recruits. In the event of differences of opinion arising between members of the board they were discussed, and in the few cases where they failed to come to a decision the opinion of the majority prevailed or the recruit was sent to a special hospital for examination.

The CHAIRMAN: As far as you know, have any steps been taken to let medical boards know of the Ministerial pledges in the House of Commons affecting the policy of the medical boards generally?

Colonel LEWTAS: I presume they would get that in the Army Council's instructions.

The CHAIRMAN: Do you know anything that contains a statement of Ministerial pledges?

Colonel LEWTAS: I do not know that I do. All we know about are the instructions coming from the Army Council.

Evidence of Surgeon-General Bedford.

On Monday, July 9th, Surgeon-General BEDFORD, Deputy Director of Medical Services in the Northern Command, gave evidence. He described the working of medical boards. He stated that the president must be in a position to supervise the whole work of the board and be consulted by the whole of the examiners in regard to difficulties. He must himself classify recruits. That came about on Feb. 23rd of this year. The presidents of boards in the Northern Command reported to him. His own experience had been entirely in the Army. He was of opinion that the regular officer made the best president.

The CHAIRMAN (Mr. SHORTT): Why?

Surgeon-General BEDFORD: Because he has intimate experience of the conditions of military service and of what is called for from the soldier in camp, barracks, and bivouac. He admitted that regular medical officers had in peace time no experience of passing men in the lower categories as they were not then accepted. The civilian practitioner had been trained all his life never to look further than the individual, and he was inclined to reject permanently men who were of potential value in the lower categories. In reply to a question whether the attention of the boards had been drawn to this, witness said that he had sent out in September of last year a memorandum on the subject. It was of a confidential nature.

The CHAIRMAN read the memorandum which called attention to the very large proportion of men found permanently unfit by some of the boards, and to the great variety of results shown in a comparison of the returns of the boards. It was emphasised that every man found permanently unfit by a board was lost to the Army, and he could not be called up for re-examination or service of any kind. In future boards must understand that any man who was of any potential use to the Army for fighting, marching, digging, hauling, cooking, engine-driving, motor-driving, or as a draughtsman, tailor, electrician, baker, telegraphist, or a member of one of the trades or occupations necessary for the maintenance of the Army must be taken and placed in one category or another, and must not be permanently lost to the Army by being found unfit. Some boards were alive to this. Other boards were allowing enormous numbers of men to slip through their hands and become lost to the service. This must now cease and all boards must approximate their percentage of rejections to the lowest figures of the category appearing in the returns under review. Was there any difficulty (the CHAIRMAN asked) in getting that order acted upon by civilian doctors?

Surgeon-General BEDFORD: I think the boards responded to it very well. The memorandum was issued after a meeting at the War Office, which, he thought, took place in September.

The CHAIRMAN: Was it agreed that a memorandum should be sent out?

Surgeon-General BEDFORD: The general purport of the meeting was that there was a preventible leakage on account of the high percentage of rejections.

The CHAIRMAN: Did Sir Alfred Keogh know that you were to send this out?

Surgeon-General BEDFORD: I presume that he must have known that we were to do something to interpret the policy of the War Office with regard to this high percentage of permanently unfit.

The CHAIRMAN: You took it at the meeting that it was understood something should be done?

Surgeon-General BEDFORD: Yes.

The CHAIRMAN next took up a circular letter sent out by Surgeon-General Bedford on June 22nd, in which it was stated that men were being passed who were of no potential use to the Army. He had (the letter proceeded) been inspecting certain labour units, and he was shocked to see the specimens of humanity who had been accepted as of potential value to the Army—men almost totally blind, deformed, of the poorest physique, cases of severe rheumatism, cases of paresis which rendered locomotion almost grotesque, and several cases of insanity. This scandal must be stopped at once. Unless a recruit was of some potential value to the Army he should be rejected.

Surgeon-General BEDFORD explained that this communication was made after he and the general officer commanding had made an inspection of a labour battalion. He presumed that the pledges of Ministers would be communicated in the form of instructions from the Army Council.

In answer to Sir GODFREY BARING, Surgeon-General BEDFORD stated that the labour units which he inspected before the issue of the circular letter were the dregs of an enormous command, and they were taken out of very large numbers of men indeed. He thought on the whole the work of the boards had been good.

Sir GODFREY BARING: Do you now think the word "scandal" is too strong?

Surgeon-General BEDFORD: Yes. I should not have used the word "scandal." I was very much annoyed when I saw the particular units in question. They are the dregs of an enormous number of men, and when you have regard to these numbers the cases in question formed a minute proportion of the whole.

Surgeon-General JENCKEN, of the Eastern Command, also gave evidence. He stated that he had had many complaints as to the Mill Hill board, but he regarded them as unjustifiable. He was asked by the committee to furnish the correspondence on the subject of the complaints.

The Southern and Scottish Commands.

On Tuesday, July 10th, Surgeon-General BIRRELL, D.D.M.S., Southern Command, gave evidence. He spoke of the system of medical boards in that area. His experience was that the percentage of rejections varied very much, but some of the boards worked in agricultural and others in town districts. The percentage of rejections was much larger in the towns than in the country, and he thought that was due to the difference in the physique of the men. In cases of doubt the presidents of boards decided in consultation with the members. A president did not decide against the opinion of his board. The Army Council had issued an instruction that the president was to classify recruits, but he would do that after consultation with the boards. Witness went at considerable length into the administrative work of his office.

Replying to Mr. PRINGLE, Surgeon-General BIRRELL said that in his view a man should be put into the category for which he was fit at the time he was examined. The standard of fitness for general service had not been lowered, but some disabilities for which men were formerly rejected were not now considered as sufficient for disqualification. A medical board would attach importance to a certificate given by a man's own medical man, but he admitted that an Army Council instruction forbade civilian practitioners who had received commissions giving such certificates.

Mr. PRINGLE remarked that this would prevent large numbers of men producing the only evidence which they could otherwise obtain from a medical man.

The CHAIRMAN read two circular letters. One, it was stated, was sent out by Sir Alfred Keogh, Director-General of Medical Service, to the Deputy Directors of Medical Service. It was dated July, 1915, and it ran:—

I wish you to regard what I say as confidential. It is imperative for you to get as many men as possible not fit for war service put into a category as fit for garrison service abroad. We have so many civilian medical men working with us that you will have to be very strong in your action as regards the acceptance of their opinion when they reject men as unfit for garrison service abroad. This is a time when only very severe disability—heart disease, kidney disease, and so on—should be regarded as rendering men unfit. All those disabilities which in peace time we have been accustomed to consider should now go to the wall—varicocele, varicose veins, hammer toes, and a hundred and one other things which do not incapacitate men for ordinary garrison work. I would not write to you on this subject if the matter were not one of primary importance, concerning which Lord Kitchener is very anxious. Take it upon yourself to overrule decisions which place men in categories as unfit

for garrison service abroad for disabilities only which do not incapacitate very completely.

Surg.-General BIRRELL said that he had not seen this letter

The CHAIRMAN then read another letter from Sir Alfred Keogh issued after the meeting at the War Office in September, 1916. This letter said:—

Please issue orders to medical boards in your command that they are not totally to reject any man who can perform any kind of work without danger to himself or to others. Sedentary work does not mean clerical work only. It means any class of work which a man can do not involving the class of duties appropriate for other categories. Every man who can earn a livelihood in civil life can do something in the Army and it is perfectly ridiculous the continuance of these enormous numbers of rejections in each command. Will you please stop it at once and give very definite orders to your boards?

Surgeon-General BIRRELL said that on receipt of this letter he sent out a telegram saying that no man must be totally rejected for the Army who was fit for any work in it.

Surgeon-General CULLING, D.D.M.S., Scottish Command, was also called as a witness. It was not the case, he said, that in his command the policy was followed of inculcating into medical boards that owing to the difficulty of securing men for the higher categories they should turn the scale against the individual and in favour of the Army in cases where there was doubt. He was present at the War Office meeting of surgeons-general in September of last year, and he had afterwards issued a circular to presidents of medical boards that they were not to reject any men who could perform any kind of work without danger to themselves and others. It stated that the enormous number of rejections in his command ought to stop at once. He had not personally gone previously into the number of rejections in his command. A document dealing with heart murmurs had also been sent out from his office.

Answering Mr. PRINGLE, he admitted that the circular which he had sent out was done automatically as the result of the meeting in London. It was not confidential and it was marked "Urgent."

On Wednesday, July 11th, Surgeon-General HATHAWAY gave evidence as to the medical boards in the Western Command.

HOUSE OF COMMONS.

WEDNESDAY, JULY 4TH.

Lieutenant-Colonel Carter, I.M.S.

Answering Sir J. JARDINE and Mr. HOUSTON, Mr. CHAMBERLAIN said: Major Carter has suffered no injury and will suffer none in his career on account of the efforts which he made to bring to notice and to secure a remedy for the deplorable defects in the medical arrangements in Mesopotamia. I am only waiting till the copies of the report of the Commission can reach India to bring his conduct to the notice of the Government of India with a view to his services receiving suitable recognition. Meanwhile I may say that on account of his special knowledge and experience he was sent home in May, 1916, to advise as to the fitting out of hospital ships, &c., building in this country for Mesopotamia, and he has been engaged on this and similar work at the War Office ever since. Far from desiring to penalise him, the Government of India has more than once applied for his services, but on each occasion the War Office replied that he could not be spared from the valuable work he is now doing. Major Carter was granted the temporary rank of lieutenant-colonel on August 8th, 1916. He held the rank of major for three years previous to that date. He joined the Indian Medical Service from this country in 1902 at the age of 26.

Medical Board of the India Office.

Mr. CROOKS asked the Secretary for India whether the decisions of the medical board of the India Office were decided by a majority of the members; whether he would consider the advisability of adding a civilian doctor of eminence; and whether some provision for appeal against a decision or for a re-hearing could be made, in view of the fact that a decision at the present time, against which no appeal could be made, might in error cut short a promising career in the Indian Service.—Mr. CHAMBERLAIN answered: The India Office medical board consists of a president and one member. Their reports are submitted under their joint signatures. In the event of a difference of opinion that of the president would, no doubt, prevail. A suggestion that a civil medical practitioner should be added to these two I.M.S. officers was considered by me in Council about 18 months ago, but it was considered that there were not sufficient grounds for enlarging the present board. Having regard to the special character of their duties, I attach importance to the possession by members of the board of experience of the Indian climate and conditions. I am not aware of any such case having occurred as that suggested in the last part of the question. But if the honourable Member can give me particulars I will look into it. The practice of the board in all doubtful cases is to give the officer the benefit of the doubt, especially when pay or pension is involved.

Prisoners of War in Turkey.

Replying to Mr. MARRIOTT, Mr. J. F. HOPE (representing the War Prisoners Department) said: His Majesty's Government is unfortunately aware that there has been a very high rate of mortality among all the British non-commissioned officers and men, prisoners of war in Turkey, and constant representations have been made to the Turkish Government with a view to the improvement of their condition. The Ottoman Government recently consented to a concentration at one or two camps of all invalid prisoners of war with a view to better medical attention, but His Majesty's Government has yet to learn to what extent this measure has been carried out and what benefit has ensued from it. The prisoners of war in the Taurus and Amanus regions are being attended by British medical officers.

Military Hospitals in Oxford.

Mr. MARRIOTT asked the Under Secretary for War whether patients suffering from malarial fever were being sent for treatment to the military hospitals in Oxford; if so, whether Oxford had been specially selected for the treatment of patients suffering from this disease; and would he state the grounds upon which this selection had been made.—Mr. MACPHERSON replied: The answer to the first part of my honourable friend's question is in the affirmative. With regard to the remaining parts of the question a hospital in Oxford is one of a number of hospitals in the United Kingdom in which cases of malaria are being treated by specially qualified medical officers. The hospitals referred to were selected as convenient centres on the advice of the leading malaria experts.

Regulation Flour and Health.

In reply to Mr. ALLEN BAKER and Mr. HASLAM, Mr. BRIDGEMAN (speaking on behalf of the Ministry of Food) said: An expert committee is now engaged in the investigation of all questions relating to the effect which the Government regulation flour has upon the health of the community. The conclusion so far is, that while bread made from this flour, when properly baked, is perfectly wholesome, there are unavoidable local variations in the flour used and in the methods of bread-baking, and that these points require constant attention. It is inevitable that in the manufacture and use of a new and unfamiliar material for bread difficulties should arise, but I see no reason why difficulties which have occurred and been overcome in other countries should not be overcome here. In any case, having regard to the prospective supplies, there is no likelihood of being able either to lessen to any substantial extent the percentage of extraction from wheat or to admit the manufacture of a pure white flour.

Sterilised Meat in Scotland.

Mr. MUNRO (Secretary for Scotland), in reply to Mr. ANDERSON, wrote: I understand that the local authorities at Glasgow, Dundee, Hamilton, and Aberdeen have made, or are considering, arrangements for sterilising parts of specially selected carcasses of tuberculous animals for sale to the general public. The methods adopted have the approval of the Local Government Board for Scotland, who are satisfied that the selection of carcasses and the methods of sterilisation are such that the meat is rendered harmless and may be consumed without injury to health; and that it forms a useful addition to the food-supply of the country.

THURSDAY, JULY 5TH.

The Gratuity to Retiring Naval Surgeons.

Mr. HOHLER asked the Secretary to the Admiralty—

Whether the position of a naval surgeon retiring before the war with a gratuity was as follows: that the Admiralty had no further claim on his services, that as a voluntary act on his part he could place his name on an emergency list which in case of his being called upon to serve would entitle him to the rate of pay he was receiving when he retired plus a bonus of 25 per cent., and that for this voluntary act he received no extra gratuity or reward of any kind; whether he was aware that some ten or more naval surgeons who had retired before the war with a gratuity, and who had placed their names on the emergency list, had been called upon to serve but were not receiving the pay promised, the Admiralty claiming to deduct, and deducting, from their pay a sum equal to the interest on their gratuity, and would he refer to any statute, regulation, or Order in Council made before the war that justified this; if not, would he at once direct the repayment of the sums illegally deducted with interest at 5 per cent. to these naval surgeons; and would he state on what principle this deduction had been made and the rate of interest taken.

Mr. MACNAMARA answered: The position of the officer in question is indicated in the first part of the question. On being called out he receives (1) the rate of pay earned prior to withdrawal, and (2) a bonus of 25 per cent. in lieu of any further retiring allowance. The gratuity paid on withdrawal is in effect a commuted allowance and is comparable with the annual allowance payable to officers retiring under other conditions. The bonus is paid to both the emergency officer and the retired officer when re-employed and when the latter has his retiring allowance suspended, it is consistent to deduct the annual value of the gratuity received by the former officer. The authorising regulation is Order

in Council, May 13th, 1901, No. 157, under which the Treasury has approved both the payment of the bonus and the deduction referred to. Any doubt as to the legality of the decision regarding the latter would, therefore, be equally applicable to the former. The annual value of the gratuity is calculated on the basis of the cost of an immediate life annuity at the date of the withdrawal under the Post Office annuity table in force at the time.

Mr. HOHLER: Does the right honourable gentleman think you ought to give a man a gratuity and subsequently charge interest on it when the man rejoins on his own initiative?—Mr. MACNAMARA: The heart of the matter is this. The gratuity is considered to be a commuted allowance. The officer retired on allowance and re-employed got his allowance suspended. So it is deemed equitable to deduct the annual value of the gratuity from the officer retired on the same.

Mr. HOHLER: Has not the gratuity been used to get a practice?—Mr. MACNAMARA: I should be glad if my honourable and learned friend would argue his view, for which I have always much respect, before our Medical Director-General, the Accountant-General, and myself.

Medical Women Employed in France.

Mr. CURRIE asked the Under Secretary for War—

What differences, if any, as to rank, messing, gazetting, pay, allowances, badges, pensions, and status generally existed between medical men belonging permanently or temporarily to the Royal Army Medical Corps and duly qualified medical women employed, or about to be employed, in France or elsewhere abroad; whether an assurance could be given that any outbreak of illness amongst women attached as workers to our Army in France would be adequately dealt with; and whether Sir Alfred Keogh, as chief of the Army Medical Service, was the authority officially responsible for the medical care of women so serving.

Mr. MACPHERSON wrote in reply: The complete details as to pay, allowances, pensions, &c., are not yet settled. The Director-General, Army Medical Service, Sir Alfred Keogh, is responsible for the employment of these ladies and for dealing with illness amongst them.

Tuberculosis Schemes in Ireland.

Mr. PATRICK MEEHAN asked the Chief Secretary for Ireland whether he was aware that the grants made to the Queen's County Insurance Committee for sanatorium benefit for insured persons were inadequate and had been decreasing annually for the past five years; whether he was aware that the reduction of the grants had deprived insured persons of benefits to which they were entitled; and whether he intended taking any action in the matter.—Mr. DUKE wrote in reply: The returns of expenditure made by county councils in connexion with tuberculosis schemes indicate that there is a falling-off in the estimated receipts from the Insurance Committees in respect of the treatment of insured and exempt patients in the current year as compared with last year. The consequent deficit will fall equally on the Exchequer Maintenance Grant and the local rates. The question of grants for sanatorium benefit can only be dealt with by the National Health Insurance Commission.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ALDOUS, G. F., F.R.C.S. Edin., has been appointed Consulting Surgeon to the Kingsbridge Cottage Hospital.

HAYTON, C. H., F.R.C.S., Honorary Assistant Surgeon to the Ear, Nose, and Throat Department at the Prince of Wales's General Hospital, Tottenham.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERDEEN ROYAL ASYLUM.—Temporary Assistant Physician. Salary from £250 to £350 per annum, with board, &c.

BATH COUNTY BOROUGH.—Temporary School Medical Officer. Salary £500 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—House Surgeon. Salary £250 per annum and war bonus, board, &c.

BIRMINGHAM GENERAL DISPENSARY.—Temporary Tuberculosis Officer. Salary £600 per annum.

BOURNEMOUTH, ROYAL NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—Resident Medical Officer and Clinical Tuberculosis Officer. Salary £430 per annum, with board, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL, Poole-road—Resident House Surgeon for six months. Salary £250 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon Salary £200 per annum, with board, &c.

DURHAM COUNTY COUNCIL.—Female Assistant School Medical Officer. Salary £300 per annum, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident Medical Officer. Salary £200 per annum, with board, &c. Also Assistant Resident Medical Officer. Salary £100 per annum, with board, &c. Also House Physician for six months. Salary 30 guineas.

INSURANCE COMMITTEE FOR THE COUNTY OF LONDON.—Medical Adviser.

ITALIAN HOSPITAL, Queen-square, London, W.C.—House Surgeon for six months. Salary £150 per annum, with board, &c.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Female House Surgeon.

MACCLESFIELD GENERAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

MARGATE, ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Surgeon. Salary, if resident, £150 per annum, with board, &c.; if non-resident, salary at rate of £250 per annum

METROPOLITAN BOROUGH OF BETHNAL GREEN.—Female Assistant Medical Officer of Health. Salary £400 per annum.

NATIONAL HOSPITAL AND UNIVERSITY COLLEGE HOSPITAL SCHOOL OF MASSAGE AND ELECTRICAL TREATMENT, Queen-square, W.C.—Female Head of the School. Salary £200 per annum, with board, &c.

NETLEY, WELSH HOSPITAL.—Medical Officer. Salary £400 per annum, with board, &c.

NORTHAMPTONSHIRE WAR HOSPITAL.—Resident Medical Officer. Salary £1 daily, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary £100 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House Surgeon.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physicians. Salary £50 per annum, with board, &c.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.

ST. ANDREW'S HOSPITAL, Dollis Hill, London, N.W.—Resident Medical Officer for six months. Salary £323 15s., with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c. Also Two House Surgeons. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female House Physician for six months. Salary at rate of £100 per annum, with board, &c. Also Anæsthetist for Tuesday afternoons. Salary 10s. 6d. per attendance.

SUNDERLAND COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary School Medical Officer. Salary £450 per annum.

WEST RIDING OF YORKSHIRE, MIDDLETON-IN-WHARFEDALE SANATORIUM, near Ilkley.—Assistant Resident Medical Officer. Salary £325 per annum.

WINCHESTER, HAMPSHIRE COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health. Salary £300 per annum.

NOTICE is given of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Macclesfield and Congleton and Sandbach County Courts in County Court Circuit No. 9. Applications should reach the Private Secretary, Home Office, not later than August 2nd next.

Births, Marriages, and Deaths.

BIRTHS.

DAVISON.—On July 3rd, at a private nursing home, the wife of H. Glen Davison, M.D., Captain, R.A.M.C., of a daughter.

EDWARDS.—On July 6th, at Grosvenor-street, Mold, North Wales, the wife of Roger B. Edwards, M.B., B.S., of a son.

PITT.—On July 1st, at St. Hildas, 326, Hoe-street, Walthamstow, the wife of W. O. Pitt, M.D., D.P.H., of a son.

SWAN.—On July 6th, at Wimpole-street, W., the wife of R. H. Jocelyn Swan, M.S. Lond., F.R.C.S., Major, R.A.M.C., of a daughter.

WANKLYN.—On July 7th, at a nursing home, Worthing, the wife of Captain W. McC. Wanklyn, R.A.M.C., of a daughter.

MARRIAGES.

SIMSON—HOOPER.—On July 7th, at St. Andrew's, Ashley-place, Lieutenant-Colonel Harold Simson, R.A.M.C., to Lilian Sybil Doulton, only daughter of Mr. and Mrs. Kinnersley Hooper, of Little Tangley, Wonersh, near Guildford, and St. James's Court.

WATSON—HAMENDT.—On June 16th, at New St. Andrew's Church, Toronto, Benjamin Philp Watson, M.D., F.R.C.S.E., F.A.C.S., Professor of Obstetrics, University of Toronto, to Angèle, daughter of Monsieur and Madame Hamendt, St. Nicolas, Belgium.

DEATHS.

ATKINSON.—On July 7th, suddenly, at Claramont, Felixstowe, Lieutenant Ambrose Atkinson, R.A.M.C., aged 57.

GREER.—On June 16th, killed in action, Captain Morrice Greer, R.A.M.C.

MACKINLAY.—On July 1st, at The Green House, Coatham, Redcar, James Egan Harrison Mackinlay, M.R.C.S., L.R.C.P., J.P.

PILCHER.—On July 3rd, at Gloucester-road, S.W., Colonel J. G. Pilcher, F.R.C.S., I.M.S. (retired), in his 79th year.

WHINCUP.—On July 2nd, in France, accidentally drowned, Lieutenant Frank Whincup, R.A.M.C., of Shrewsbury, aged 43.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HEELS AND HEALTH.

IT appears that the Legislature of Illinois has fixed a maximum height for heels of one inch and three-eighths. 70 per cent of the women concerned appear to wear heels two inches high, and the majority of the remainder heels of one inch and five-eighths. The order has been made on the grounds of economy. Heels are not seen in ancient footgear, and not all the men wore footgear at all, so that their abuse is a comparatively modern one. Military men have generally worn different boots according to rank, while men of lower rank went barefooted in all early civilisations, chalking their feet or using other preparations. At times women have made use of wooden soles raised some inches from the ground, but these were really low stilts and not high heels. The present-day high heels are often called Louis XV. heels, and the name strictly refers more to the shape of the heel which has the curves introduced at that flamboyant epoch, regardless of all orthopædics. A heel which has become somewhat popular during the last few years is the straight-backed heel, or, as it is called, the "Cuban" heel. If the heel is not sufficiently broad the foot wobbles at each step, hesitating and trying to find its balance like the foot of a poor tight-rope walker. This is a strain on the tendons of the foot and the weak ankle. The height of heels has a medical bearing, and having regard to some of the footgear which fashion exposes among modern women with unusual frankness, we suggest that this bearing is lost sight of.

THE CAUSATION OF SEX.

To the Editor of THE LANCET.

SIR,—In your notice of Mr. Dawson's book in your issue of July 7th you observe that Mr. Dawson contends "that male ova come exclusively from the right ovary and female ova from the left ovary." About 26 years ago I removed the right ovary from a lady about 40 years of age whose menses had been suppressed for two years. Four weeks after the operation she menstruated once and then became pregnant, giving birth to a girl (still living and a mother). After this in due time she became pregnant again and gave birth to a boy who was married two years ago. The lady is still living.

I am, Sir, yours faithfully,

J. E. BURTON,
Consulting Surgeon, Hospital for Women, Shaw-street, Liverpool.

July 10th, 1917.

A BELGIAN DOCTOR'S VIEW OF SOCIAL MEDICINE IN ENGLAND.

IN a recent number of the *Archives Médicales Belges* Dr. René Sand, medical officer in charge of the Ambulance at La Panne, writes with appreciation of the efforts at social amelioration which are being made in this country during the war. His conclusion is as follows:—

Le plus grand changement qui soit survenu en Angleterre dans ces deux dernières années n'est pas, comme pourrait le croire un esprit superficiel, l'institution du service militaire obligatoire—il n'est qu'une innovation—c'est la naissance d'un esprit public nouveau, qui repousse les palliatifs, n'accepte plus de temporiser, mais taille ses revendications à la mesure de l'intérêt général. Le coût des réformes sociales, leur amplitude, leur nouveauté faisaient hésiter l'Anglais de 1914. Mais la guerre lui a appris à compter par milliards de livres et par millions d'hommes; elle l'a contraint à résoudre en quelques semaines des problèmes aussi complexes que l'alimentation d'une nation entière; elle l'a habitué à l'action méthodique, coordonnée, disciplinée; elle lui a enseigné la hardiesse, la rapidité, le sacrifice des intérêts individuels; elle lui a montré les bienfaits de l'organisation, préparant ainsi aux réformes le terrain le plus favorable. Déjà pendant la guerre bien des innovations ont été introduites. Mais c'est dans la création d'un esprit nouveau que réside le plus beau gage d'avenir.

THE ECONOMIC PRODUCTION AND DISTRIBUTION OF MILK.

WITH reference to our observations on the keeping properties of condensed milk in a leading article under the above heading in our issue of last week, Messrs. Nestlé and Anglo-Swiss Condensed Milk Company, of 6 and 8, Eastcheap, London, E.C., who are well known as the largest producers in Europe and elsewhere of both the sweetened (not containing more than 40 per cent. of cane sugar) and unsweetened variety of full-cream condensed milk, write that: "1. Sweetened condensed milk, when properly made, will keep perfectly good for 9, 12, or more months, but as it is the object to preserve it during the summer for use during the winter, a maximum period would not exceed nine months between production and consumption. 2. Unsweetened condensed milk relies on complete sterilisation for its keeping properties and is guaranteed in any climate for two years, while it will keep intact for any period beyond that so long as the tin is unopened. 3. The economy in sugar, *qua* sugar, is such when sweetened condensed milk is used that so long as there is sugar to use for condensing whole milk the cost of a tin of milk compares favourably with the prices of the sugar and raw milk it contains." These observations are of special interest in view of the urgent need of preserving present supplies, while they are plentiful, in order to make up for the shortage of the coming winter.

S. D. S.—The literature is copious, but the best works are necessarily not written for lay readers.

T. C. next War.—The inequality to which attention is drawn has more than once been brought to the notice of the authorities.

G. B.—All preparations of paraffin tend to cause indurations when injected into the tissues. In the case of mercurial injections the quantity of liquid paraffin is so small that induration rarely results; theoretically at least a true oil should be preferable for the preparation of a mercurial cream.

F. C. P.—The important word "not" was dropped out, as fortunately the context shows. We are obliged for having the error pointed out. "Accustomance," the word of the learned lecturer, is in the Imperial Dictionary; "informatory" is now a much-used adjective.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETING OF SECTION.

Thursday, July 19th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.

Cases (at 4.30 P.M.).

Dr. Parkes Weber: (1) Macular Atrophy of the Skin associated with Ordinary Vitiligo; (2) Hirsuties in a Child; (3) Unilateral Striæ Atrophicæ of the Thorax (photograph).

And other cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37, Russell-square, W.C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture XIV.:—Lieut.-Col. S. M. Copeman, R.A.M.C.(T.F.): Sanitation in War Time. Followed by a discussion.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 11th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maxi-mum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 5	...	112	70	54	51	55	Cloudy
,, 6	...	113	72	54	53	58	Overcast
,, 7	...	118	74	54	60	65	Fine
,, 8	0·10	64	62	57	56	57	Raining
,, 9	0·69	104	65	52	52	53	Overcast
,, 10	0·30	116	67	50	53	59	Cloudy
,, 11	...	104	70	53	54	56	Fine

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

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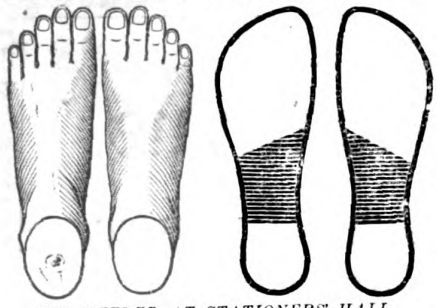
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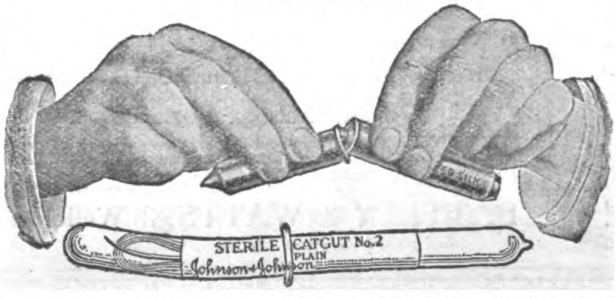
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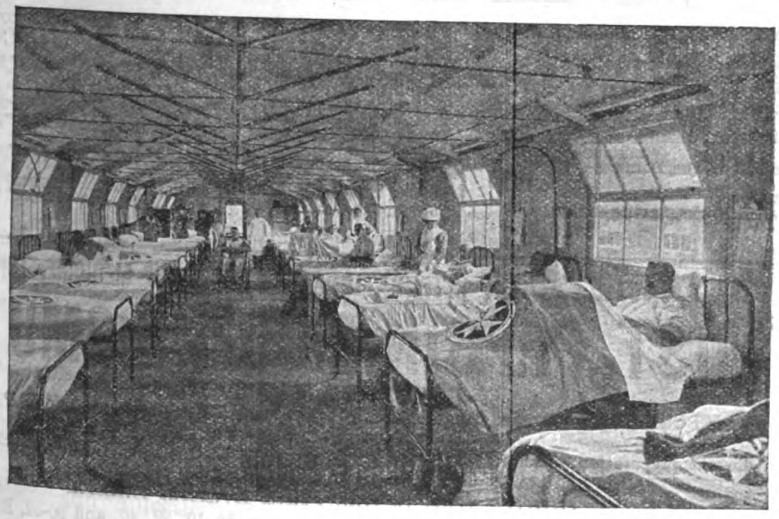
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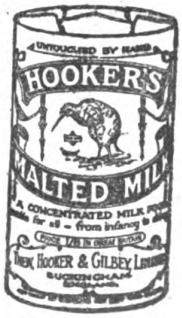
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Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.
Climate healthy and bracing.
Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.



STONYCREST,

HINDHEAD, SURREY

800 feet above Sea Level.

NURSING AND CONVALESCENT HOME.

Massage. Electrical treatment and Surgery.

Picturesque situation, commanding unbroken views of the Sussex and Hampshire Downs.

Apply, SECRETARY, as above. Telephone: Hindhead 27.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.
Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.

Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

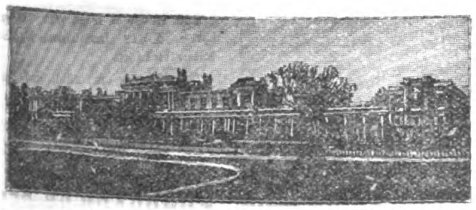
LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.

MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.

Other days by appointment.

Visiting and Consulting Physicians: Sir JAMES BARR, LL.D, M.D, F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.
Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES

Situated in a large park in a healthy and picturesque locality easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED, Certificated or otherwise.
Dr. STANLEY GILL or Dr. HAYES GILL may be consulted at 31, RODNEY ST., LIVERPOOL, from 2 till 4 P.M. every Monday and Thursday
For terms, &c., apply to STANLEY A. GILL, M.D., M.R.C.P. Lond. Telephone—No. 8 FORMBY.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients. The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.
PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D.Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone 769.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

HOMES FOR INEBRIATE WOMEN.

ELLISON LODGE, Herne Hill, S.E.
CORNGREAVES LODGE, Erdington, Birmingham.
HAMOND LODGE, Terrington St. Clement, King's Lynn [Norfolk.
TEMPLE LODGE, Torquay.

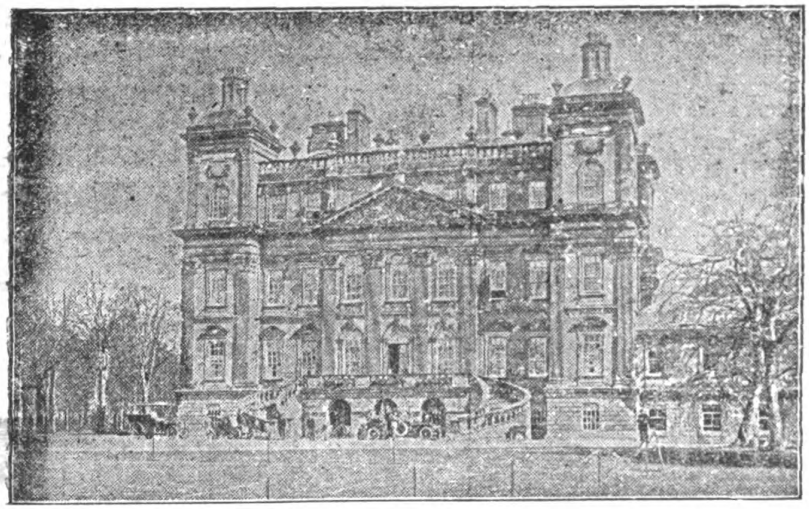
Terms: Drawing-Room, £2 2s., £1 1s.; Work-Room, 15s., 12s. 6d., 10s. Kitchen, 7s. 6d. weekly.

REV. GERALD A. THOMPSON, Secretary Church of England Temperance Society, 50, Marsham-street, Westminster, S.W.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply *to* F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.
Telephone: 16 Rickmansworth.





DUFF HOUSE, BANFF SCOTLAND.

TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.

NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON, Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

DARTMOOR SANATORIUM. 750 FEET.

TUBERCULIN USED ONLY FOR SUITABLE CASES.
WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; —— ——
For particulars, apply C. H. BERRY, M.R.C.S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pines, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 43, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric Installation for Baths and Medical purposes. Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

The Italian Hospital.—Applications

are invited for the post of HOUSE SURGEON (either sex) from 1st September next. Candidates must be doubly qualified and registered.

The appointment will be for six months, renewable at the pleasure of the Committee of Management.

Salary £150 per annum, with board and residence.

Applications, with copies (only) of testimonials, should be forwarded to the Secretary, Italian Hospital, Queen-square, London, W.C., on or before Tuesday, the 31st July next.

West Riding of Yorkshire.—Assistant

RESIDENT MEDICAL OFFICER.—The County Council of the West Riding of Yorkshire invite applications for the appointment of Assistant Resident Medical Officer (Male or Female) for the Middleton-in-Wharfedale Sanatorium, near Ilkley.

Salary £325 per annum.

Further particulars and form of application may be had from the undersigned, by whom all applications, with copies of not more than three testimonials, must be received not later than 30th July, 1917.

FRANCIS ALVEY DARWIN, Clerk of the County Council.

County Hall, Wakefield, July, 1917.

Birmingham General Dispensary.—

Temporary TUBERCULOSIS OFFICER. — Applications are invited for the above post from gentlemen experienced in the diagnosis and treatment of Tuberculosis.

The candidate appointed must devote his whole time to the work, and must be ineligible for Military Service.

Salary £600 per annum.

The appointment to be terminable at two calendar months' notice.

Applications, stating when available, and accompanied by copies of three recent testimonials, to the undersigned.

32, Union-street, Birmingham.

E. W. FORREST, Secretary.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

County Borough of Sunderland.—

EDUCATION COMMITTEE—Temporary SCHOOL MEDICAL OFFICER.—Applications are invited from fully-qualified women or a man not eligible for Military Service for the post of Temporary School Medical Officer during the absence of the permanent Staff on Military Service. The person appointed will be required to devote his or her whole time to the service of the Education Committee, and will not be permitted to undertake any private practice or to hold any other appointment without the sanction of the Committee. Salary £450 per annum.

The appointment will be subject to three months' notice in writing given by either party.

Applications—to be made on forms which may be obtained from the undersigned—must be returned on or before 21st July next, accompanied by copies of not more than three testimonials. Canvassing, either directly or indirectly, until after the first selection of candidates by the Committee, will disqualify the applicant by whom or on whose behalf such canvassing shall have been made

HERBERT REED, Secretary.

Education Department, 15, John street, Sunderland, June, 1917.

Durham County Council. — The

County Education Committee invite applications for the post of ASSISTANT SCHOOL MEDICAL OFFICER (woman), to act under the County Medical Officer, in connection with the inspection of children attending elementary schools, and such other duties as may from time to time be required by the Education Committee.

The salary will be £300 per annum, rising by annual increments of £25 to £350 per annum (in addition to a war bonus at the rate of £25 per annum), together with reasonable travelling and out-of-pocket expenses. The successful candidate will be required to devote her whole time to the duties of her office, and to reside in or near the district to which she may be attached, at a place to be approved by the County Education Committee.

In making the appointment preference will be given to the candidate who has

(1) Enjoyed special opportunities for the study of the diseases in children.
(2) Had some definite experience in school hygiene; and
(3) Had adequate training in State Medicine, or holds a diploma in Public Health.

The appointment will be subject to three calendar months' notice on either side, to expire on the last day of any calendar month. Applications, endorsed "School Medical Inspector," accompanied by copies of not more than three testimonials, must be sent not later than Wednesday the 18th July, 1917, to the undersigned, from whom forms of application (to be completed in candidate's own handwriting) can be obtained.

Canvassing, directly or indirectly, is prohibited, and will disqualify.

A. J. DAWSON, Clerk to the Education Committee.

Shire Hall, Durham 2nd July, 1917.

Royal Free Hospital, Gray's Inn-road, W.C.

—HOUSE PHYSICIANS.—Applications are invited from duly qualified and registered Medical Men or Women for the above posts. Salary £50 per annum, with board, residence, and laundry.

Applications should be sent to the Secretary not later than July 16th, 1917.

Hospital for Consumption and DISEASES of the CHEST, Brompton.

—The Committee of Management invite applications for the post of HOUSE PHYSICIAN. Applicants must be ineligible for Military Service. The duties include work in the Out-patient Department as well as in the wards. Further particulars may be obtained from the undersigned, to whom applications, with testimonials, should be addressed. The appointment is for six months, with an honorarium of 30 guineas.

July, 1917. FREDERICK WOOD, Secretary.

Resident Medical Officer.

—The Committee of Management of the HOSPITAL for CONSUMPTION and DISEASES of the CHEST, Brompton, invite applications for the post of Resident Medical Officer in the absence of the present holder who is on active service. Salary £200, with board and residence. The duties at present attaching to the post include routine Laboratory work and Lectures to the Nursing Staff, for both of which an additional remuneration of £141 is received.

Candidates must be registered practitioners and qualified in Medicine and Surgery, and must be over Military age. Printed instructions, with particulars of the duties, may be obtained from the Secretary at the Hospital.

Brompton, July, 1917. FREDERICK WOOD, Secretary.

Assistant Resident Medical Officer.

—The Committee of Management of the HOSPITAL for CONSUMPTION and DISEASES of the CHEST, Brompton, invite applications for the post of Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

Candidates must be registered practitioners, and must have held a resident hospital appointment for six months. Applicants must be ineligible for Military Service.

Brompton, 30th June, 1917. FREDERICK WOOD, Secretary.

Insurance Committee for the County OF LONDON.

—Applications are invited for the position of MEDICAL ADVISER to this Committee. Candidates should be of high professional standing, with special knowledge and experience of the diagnosis and treatment of Tuberculosis. Form of application and further particulars of the appointment, which is of a temporary and part-time character, may be obtained on application to the undersigned. Canvassing is a disqualification. Applications must be received at the Offices of the Committee not later than the first post on Wednesday, the 18th July, 1917. THOMAS BATEY, Clerk to the Committee.

Insurance street, W.C. 1, June 29th, 1917.

Royal Victoria and West Hants HOSPITAL, Poole-road, Bournemouth.

—Required, to commence duty immediately, RESIDENT HOUSE SURGEON. Salary £250 per annum and extras, with board, lodging, and washing. The appointment is tenable for six months. Candidates must be ineligible for Military Service, and must produce evidence of possessing a double qualification, and of being registered according to the provisions of the Medical Act.

Applications, with copies of not more than three recent testimonials, to be received by the undersigned.

W. F. DANBY, Chairman of House Committee.

Royal Victoria and West Hants Hospital, Poole-road, Bournemouth, 9th July, 1917.

Hampshire County Council.

—ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.—The Hampshire County Council propose to appoint a Temporary Assistant County Medical Officer of Health for the period of the War, and invite application from fully qualified Medical Men or Women. Possession of a Diploma or Degree in Public Health will be considered an advantage. Salary £300, in addition to travelling allowances.

Applications, with copies of not more than three testimonials, upon a form which, with the conditions of appointment, may be obtained from the undersigned, must be delivered at the Castle, Winchester, on or before Thursday, the 26th July, 1917.

The canvassing of members of the County Council or any Committee, personally or otherwise, is strictly prohibited and will disqualify.

H. BARBER, Clerk of the County Council.

The Castle, Winchester, 10th July, 1917.

Royal National Sanatorium for Consumption and DISEASES of the CHEST, Bournemouth.

—RESIDENT MEDICAL OFFICER and CLINICAL TUBERCULOSIS OFFICER.—The Committee invite applications for the position of Resident Medical Officer (Male).

The candidate selected will, subject to the approval of the Borough Council and the Local Government Board, hold the appointment of Clinical Tuberculosis Officer to the County Borough of Bournemouth, and in this capacity will be required to attend three times weekly at the Municipal Dispensary (adjoining the Sanatorium).

The salary in respect of the post of Resident Medical Officer will be £300, rising to £400, per annum, with board, residence (bachelor's quarters), and washing. For the post of Clinical Tuberculosis Officer there will be an additional salary of £130 per annum.

Applications should be made on forms to be obtained from the Secretary, to whom they must be sent in, with copies of recent testimonials, not later than July 21st, 1917.

Canvassing will disqualify. A. G. A. MAJOR, Secretary.

Macclesfield General Infirmary.

—HOUSE SURGEON, Male or Female. Salary £200 per annum, with board, &c. D. S. BOWERS, Secretary.

Liverpool Eye and Ear Infirmary, Myrtle-street, Liverpool.

—Applications are invited for the post of LADY HOUSE SURGEON. Particulars as to duties, remuneration, &c., may be obtained from the Hon. Sec. of the Medical Board.

Queen Mary's Hospital for the East END (170 beds).

—Wanted, HOUSE SURGEON, to commence duties in August. Applications should be addressed to the undersigned. Male applicants must be ineligible for Military Service.

A. W. SCRIVENER, Secretary.

County Borough of Bath.—Temporary SCHOOL MEDICAL OFFICER.

—Applications are invited for the post of Whole-time Temporary School Medical Officer (Male or Female). Salary £500 per annum. Form of application can be obtained from the undersigned.

Applications must be received not later than Saturday, 21st July.

Guildhall, Bath, 9th July, 1917. FREDK. D. WARDLE, Town Clerk.

Northamptonshire War Hospital.

—RESIDENT MEDICAL OFFICER wanted, one with experience in Bacteriology preferred. Candidates must not be eligible for Military Service. Salary £1 daily, with board, lodging, &c.

Applications, with copies of two testimonials, to be sent to Administrator, War Hospital, Duston, Northampton.

Royal Albert Hospital, Devonport.

—A HOUSE SURGEON (Gentleman or Lady) is required urgently. Applicants must be duly registered. Salary £200 per annum, with board and laundry.

Applications, with testimonials, to Chairman of the Selection Committee. CHAS. W. DICKINSON, Capt. R.N., Hon. Secretary.

9th July, 1917.

Hulme Dispensary, Dale-street, Stretford-road, Manchester.

—Wanted, a HOUSE SURGEON, Male (ineligible for Military Service) or Female, duly registered and fully qualified. Salary £250 per annum, with apartments, attendance, coal, and gas. Time allowed for study.

Applications, with testimonials, at once to Honorary Medical Secretary.

St. Andrew's Hospital, Dollis Hill, London, N.W. 2.

—Applications are invited from doubly qualified and registered candidates for the post of RESIDENT MEDICAL OFFICER, vacant 4th August. Six months' appointment. Salary £323 15s., with board, residence, and laundry. Applications, with copies of testimonials, should be forwarded to the Secretary, St. Andrew's Hospital, Dollis Hill, London, N.W. 2.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. 2.

—HOUSE PHYSICIAN required on 1st August. Six months' appointment. Salary £100 per annum, with board, residence, and washing.

Applications from duly qualified and registered candidates should be sent as soon as possible to T. GLENTON-KERR Secretary.

28th June, 1917. Telephone: Dalston 305.

Wanted, for the Welsh Hospital, Netley, MEDICAL OFFICER by 26th July, 1917.

Must be fully qualified. Competent to do surgery.

Applicants must be over Military age or medically unfit for General Service.

Salary £400 per annum, with board, lodging, washing, and uniform allowance.

A Temporary Honorary Commission as Lieut., R.A.M.C., is granted by the War Office to those signing a six months' contract of service.

Apply to Officer Commanding, Welsh Hospital, Netley.

The Royal Infirmary, Sheffield (353 beds, of which 133 are Military).

—HOUSE PHYSICIAN.—Wanted, a Resident Medical Officer, Male or Female (ineligible for Military Service) for the above post.

The person appointed, who must be fully qualified, will have charge of the Medical beds under the supervision of the Honorary Medical Staff. Salary £120 per annum, with board and residence.

Applications, with copies of recent testimonials, to be addressed to me immediately. By order.

JNO. W. BARNES, Secretary.

Royal London Ophthalmic Hospital (MOORFIELDS EYE HOSPITAL), City-road, E.C. 1.

Founded 1804.—Applications are invited from men, who are ineligible for Military Service, for the office of THIRD HOUSE SURGEON.

Candidates must be registered medical practitioners, and must be prepared to begin the duties on 1st August, 1917. Salary at the rate of £50 a year and war bonus, with board and residence in the Hospital. Applications, stating age and qualifications, together with copies of recent testimonials, must be received by the Secretary-Superintendent not later than the 23rd July, 1917.

The appointment is for a period of not less than four months.

7th July, 1917. ROBERT J. BLAND, Secretary-Superintendent.

Borough Hospital, Birkenhead.—

Wanted, HOUSE SURGEON (Male or Female). Salary £250 and war bonus, board and laundry. Applications, with testimonials, to be sent to the Secretary at the Hospital.

Aberdeen Royal Asylum.—Temporary

ASSISTANT PHYSICIAN wanted during war for the Royal Asylum, Aberdeen. Salary from £250 to £350 a year, according to experience, with board and lodging. Apply, giving references and with copies of testimonials, to the Medical Superintendent.

The Royal Infirmary, Sheffield (350

beds, of which 133 are Military).—HOUSE SURGEONS.—Wanted, Two Resident Medical Officers (Male, ineligible for Military Service, or Female) for the above posts, who must be fully qualified. Salary £120 per annum, with board and residence. After three months £150 per annum.

Applications, with copies of recent testimonials, to be addressed to me immediately. By order.

JNO. W. BARNES, Secretary.

The South London Hospital for

WOMEN, South Side, Clapham Common, S.W. 4.—The Board of Management invite applications from fully qualified Medical Women for the post of HOUSE PHYSICIAN. The appointment to be for a period of six months to date from August 1st. Salary at the rate of £100 per annum, with board, residence, and laundry. Also for the post of ANÆSTHETIST for attendance on Tuesday afternoons. Honorarium 10s. 6d. per attendance.

Applications, with copies of testimonials, to reach the Secretary of the Hospital not later than first post on July 23rd.

Royal Sea Bathing Hospital for

SURGICAL TUBERCULOSIS, Margate (200 beds).—SURGEON, Male or Female, will be required early in October. If Resident the salary will commence at £150 per annum, with an increase of £50 after six months, with full board, laundry, &c. If Non-resident the salary will be at the rate of £250 per annum, with an increase of £50 after six months' service.

Candidates must be qualified and registered. Applications, with testimonials, should be sent to the Secretary, R.S.B.H. Offices: 13, Charing-cross, S.W. 1.

Metropolitan Borough of Bethnal

GREEN.—LADY ASSISTANT MEDICAL OFFICER OF HEALTH.—The Council invite applications for the appointment of a Lady Medical Practitioner as Assistant Medical Officer of Health (whole time), principally for the purposes of a Maternity and Child Welfare Scheme, at a salary of £400 per annum. Candidates must be registered Medical Practitioners possessing a Diploma in Public Health. The appointment will be temporary, terminable at three months' notice on either side.

Candidates must have had special experience in connexion with Maternity and Child Welfare work.

Applications, on forms which contain further particulars, to be obtained from the Medical Officer of Health, Town Hall, Bethnal Green, E. 2, accompanied by copies of not more than three recent testimonials, one at least bearing upon the candidate's experience in Maternity and Child-Welfare work and organising ability, must reach me not later than noon on Wednesday, the 18th July, 1917, endorsed "Assistant M.O.H."

Canvassing, direct or indirect, will disqualify a candidate.

DAVID J. KEEP, Town Clerk.

Town Hall, Bethnal Green, E. 2.

National Hospital & University College

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Anon.	50	0	0
Anon.	10	0	0
Anon.	10	0	0
Anon.	10	0	0
Anon.	10	0	0
Anon.	2	2	0
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Leith, Miss E. C.	1	1	0
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Lewis, Dr. C. E. M. ...	1	1	0
Lewis, Dr. E. W.	2	2	0
Lewis, H., Esq.	1	1	0
Lewis, Messrs. H. K. & Co., Ltd.	5	5	0
Ley, Dr. R.	1	1	0
Lilley, Dr. E. L.	5	5	0
Lindsey, Dr. C. D. ...	2	2	0
Linnell, Dr. A.	2	2	0
Livesley, Dr. W. K. ...	3	3	0
Llewellyn, Dr. E. E. ...	5	0	0
Lloyd, Dr. E. Eyre ...	5	0	0
Lochrane, Dr. C. D. ...	5	0	0
Locket, Dr. T. W.	2	2	0
Logan, Dr. G.	0	10	0
London Hospital Lodge, per Dr. R. J. Probyn-Williams	10	10	0
Long, Dr. F.	1	1	0
Lord, Dr. A. G.	1	1	0
Lord, Dr. E.	0	10	0
Lott, Dr. H. D.	1	0	0
Lovell, Dr. W. F.	1	1	0
Low, Dr. A. Bruce ...	0	10	0
Low, Mrs. C. H.	1	0	0
Lowe, Capt. J. B., R.A.M.C.	5	5	0
Lowell, R. H., Esq. ...	2	0	0
Luard, Dr. H. B.	1	1	0
Lumley, Dr. F. D. ...	1	6	0
Lutwyche, L. G., Esq.	5	0	0
Lyman, Dr. R. G.	1	1	0
Lynes, Dr. Edward ...	1	1	0
Macaskie, Dr. C. S. ...	1	1	0
McCaskie, Dr. N. J. ...	5	0	0
McColl, Dr. D.	0	10	6
McCrea, Dr. J.	2	2	0
Macdonald, Dr. P. W. ...	0	10	6
McElwaine, Dr. T. M.	1	1	0
McEwan, Dr. J.	1	1	0
Macfie, Dr. Johnstone	5	5	0
McGill, Dr. J. M.	0	10	0
McIntyre, Dr. G.	1	0	0
McKelvie, Dr. J. D. ...	1	1	0
McKendrick, Dr. J. G.	1	1	0
MacKintosh, Dr. F. I. ...	1	1	0
Mackintosh, Dr. W. ...	5	0	0
Maclagan, Dr. R. C. ...	10	0	0
M. L., per M. R.	1	0	0
Maclay, Dr. N.	5	5	0
MacLelland, Dr. R. ...	1	1	0
MacLeod, Dr. D.	3	3	0
Macmillan, Dr. D. ...	1	1	0
McMullen, W. H., F.R.C.S.	10	0	0
McNabb, Dr. A. A. J. ...	2	2	0
McNeight, Capt. A. A., I.M.S. (India)	1	1	0
McNeill, Dr. Ina L. ...	1	1	0
Macniel, Captain M., R.A.M.C.	2	2	0
MacQuaid, Dr. H. C. ...	2	2	0
Maddison, Dr. T. W. ...	5	0	0
Mahomed, Dr. G.	0	10	6
Major, Dr. H. C.	1	1	0
Makins, Surg.-Genl. Sir G. H., K.C.M.G., C.B., A.M.S.	5	5	0
Malcolm, Dr. A. J. ...	1	0	0
Maris, Dr. F. M.	1	1	0
Marriott, Fleet-Surg. H. B., R.N.	1	1	0
Mart, Dr. W. Dakin ...	2	2	0
Martin, Dr. E. F.	5	0	0
Martin, Mrs. G. Graham	1	1	0
Martin, Mrs. H. C. ...	2	0	0
Martin, Dr. H. J.	3	0	0
Martley, Dr. F. C. ...	5	5	0
Master, Dr. J. A.	1	0	0
Mathison, Dr. A. J. ...	1	1	0
Mavrogordato, Mrs. J. P.	5	5	0
Mawby, Dr. F. W. ...	1	1	0
Maxwell, Dr. J. Preston	2	2	0
Maybury, Dr. L.	1	0	0
Mayhew, Dr. E. H. ...	5	0	0
Mayne, Dr. W. B.	0	10	0
Mayo, Dr. T. A.	1	1	0
Melville, Dr. G. M. ...	2	2	0
Menzies, Captain G., R.A.M.C., F.R.C.S. ...	1	1	0
Menzies, Dr. J. A.	3	3	0
Merchant Taylors, The Worshipful Company of	21	0	0
Meredith, Miss E. A., per Dr. J. H. Griffiths ...	1	11	0
Meyer, Dr. H. (S. Africa)	5	0	0
Middlesex Hosp. Lodge, per Mr. John Murray	5	5	0
Middleton, Dr. G. S. ...	10	10	0
Midelton, Dr. W. J. ...	0	10	6
Miles, Dr. U. W. N. ...	5	0	0
Miller, Dr. A. G.	0	5	0
Miller, Dr. A. H.	2	2	0
Miller, Dr. E. A.	2	2	0
Mills, Lieut.-Colonel J., R.A.M.C.	10	0	0
Milner, Dr. E. A.	5	0	0
Milsome, Dr. H. B. ...	2	0	0
Mitchell, Dr. A. J. ...	2	2	0
Mitchell, Surg.-Major H. (ret.)	10	0	0
Moberley, Captain S., R.A.M.C.	1	1	0
Mollison, Wm., F.R.C.S.	20	0	0
Mollison, Mrs. Wm., proceeds of Sale of the Pictures of Miss Hooper	20	12	0
Monks, Dr. E. F.	1	1	0
Moon, Dr. Charles ...	1	1	0
Moon, Dr. R. O.	5	5	0
Moore, Dr. Julius	1	1	0
Morgan, Captain G., R.A.M.C., F.R.C.S. ...	1	1	0
Morgan, J. H., C.V.O., F.R.C.S.	5	5	0
Morley, Dr. H., per H. S. B.	10	10	0
Moss, Drs. F. M. & P. E.	5	5	0
Mould, Col. W.	10	0	0
Muir, Dr. J. S.	5	0	0
Muir, Dr. W. L.	1	1	0
Munden, Dr. C.	0	10	6
Murray, J., F.R.C.S. ...	2	2	0
Murray, Dr. J.	0	5	0
Murray, Dr. Wm.	5	5	0
Murrell, Dr. G. F. ...	2	2	0
Muscio, Dr. A. (Australia)	5	5	0
Muspratt, Dr. C. D. ...	2	2	0
Musson, Dr. J. C.	1	1	0
Myles, Mrs. J.	1	1	0
Neild, Dr. F.	2	0	0
Nesbitt, Dr. G.	1	0	0
Newatts, Dr. W. A. ...	1	0	0
Newsome, Dr. H.	1	1	0
Newton, Major I., I.M.S.	100	0	0
Nichol, Colonel	2	2	0
Nicholson, Surg. J. G., R.N.	1	0	0
Nisbet, Dr. G.	1	0	0
Nixon, Dr. H. F.	1	1	0
Norman-Robinson, Dr. W. A.	5	5	0
Oakeley, Capt. H. E. H., R.A.M.C.	10	0	0
Odham, Mr. W. E. ...	2	2	0
O'Donnell, Dr. Jane ...	2	2	0
O'Flaherty, The Revd. C.	1	0	0
Ogilvy, Dr. Wm. A. ...	0	10	6
Ogle, Dr. J. G.	1	1	0
Oldham, Dr. G. F.	1	1	0
Oliver, Mrs. M.	3	0	0
Olsen, Dr. A. B.	1	1	0
Orton, Dr. J.	1	1	0
Osler, Lady	5	0	0
Osler, Sir Wm., M.D., F.R.S.	20	0	0
Otago Division of the B.M.A., New Zealand, Members' 1st instalment	150	0	0
Ottawa Medico-Chirurgical Society, per Dr. R. B. Valin (Canada)...	20	0	0
Owen, Dr. R.	1	1	0
Oxley, Admiral, per Dr. C. B. Greenwood ...	0	10	0
Page, Dr. A. F.	1	1	0
Page, Dr. F.	2	2	0
Page, Dr. H. W.	1	1	0
Page, Dr. H. W.	5	5	0
Pain, Dr. R. T.	1	0	0
Palmer, Dr. H. R.	1	1	0
Papillon, Dr. J. W.	1	1	0
Paradise, Dr. T. D.	1	1	0
Parker, Dr. C. A.	1	1	0
Parkinson, Dr. T. W. ...	1	1	0
"Patients" of Dr. J. Ritchie (Glasgow) ...	23	3	0
Paton, Dr. L.	10	10	0
Paul, Dr. F. T.	1	1	0
Payne, Dr. E. M.	1	1	0
Payne, Dr. W. H.	1	1	0
Peacey, Dr. Wm.	2	2	0
Pearson, Dr. A.	1	1	0
Pearson, Dr. D. G.	1	1	0
Pearson, Dr. H. C.	2	2	0
Pemberton, Dr. R. B. ...	0	10	6
Pendlebury, H., F.R.C.S.	10	0	0
Penfold, Dr. F.	5	0	0
Peniston, Dr. A. H. ...	1	1	0
Penn, Dr. A. I.	1	1	0
Penrose, Mrs. Frank ...	3	3	0
Penrose, Dr. F. G.	1	1	0
Penrose, Dr. N. C. ...	1	1	0
Pernet, Dr. G.	1	1	0
Peter, Capt. A. G., R.A.M.C.	2	2	0
Peterkin, Dr. G.	2	2	0
Pethington, Dr. J. B. ...	2	2	0
Phillip, Dr. C. W.	2	0	0
Phillips, J., F.R.C.S. ...	1	0	0
Phipps, Miss	5	0	0
Pidcock, Mrs. F.	2	2	0
Pinching, Dr. F. W. ...	1	1	0
Pitt, Major G. Newton, R.A.M.C. (T.)	5	0	0
Playfair, Dr. E.	3	3	0
Playfair, Dr. H.	25	0	0
Playfair, Dr. J.	1	1	0
Pollard, C., F.R.C.S. ...	2	2	0
Poole, Dr. T. Brice	0	19	0
Pope, Dr. H. B.	1	1	0
Powell, Dr. Allman ...	1	1	0
Powell, Dr. S.	1	1	0
Prall, Capt. E., R.A.M.C.	0	10	0
Prentis, Dr. J. E.	1	1	0
Preston, Dr. H.	2	2	0
Preston, Dr. J. R.	2	2	0
Price, Dr. Wm.	5	5	0
Price, Sir J. F., K.C.S.I.	1	1	0
Pritchard, Miss Nesta H.	1	0	0
Pritchard, Dr. R.	5	0	0
Pullen, Dr. and Mrs. R.	1	1	0
Purves, Dr. S.	1	1	0
Radcliffe, Dr. A. H. ...	2	2	0
Raimir, Lt.-Col. N., I.M.S.	5	0	0
Rake, Dr. H. V.	1	1	0
Ramsey, Dr. F. W. ...	2	2	0
Randall, Dr. and Mrs. E.	5	5	0
Randall, Dr. M.	2	2	0
Randolph, Dr. C.	1	1	0
Ransome, Dr. E.	1	1	0
Rathbone, Miss May, M.B.	2	2	0
Rawlings, Dr. F.	1	0	0
Rawlings, Dr. J. A. ...	2	2	0
Read, Dr. Mabyn	5	0	0
Realy, Dr. J. W. G. ...	2	2	0
Rees, Dr. A.	0	10	6
Rees Capt. A., R.A.M.C.	5	5	0
Rees, Dr. Howell	1	1	0
Rees-Phillipps, Dr. S. ...	1	1	0
Reichwald, Dr., M.B. ...	1	1	0
Reid, Dr. A. G.	1	1	0
Rennie, Dr. A.	2	2	0
Richards, Dr. C. Basil ...	2	0	0
Ridewood, Dr. V. E. ...	2	2	0
Rigby, Dr. E. T.	3	0	0
Ritchie, Dr. J.	2	2	0
Rix, Dr. B.	1	1	0
Rix, Dr. R. W.	1	1	0
Roberts, Dr. E. H.	0	10	6
Roberts, Dr. P. T.	0	10	6
Roberts, Dr. L.	1	1	0
Roberts, Dr. N. O.	1	1	0
Roberts, Provost John, per Dr. J. S. Muir ...	2	2	0
Robertson, Dr. A. S. ...	1	1	0
Robertson, Dr. F. M. ...	1	1	0
Robertson, Dr. G. M. ...	2	2	0

[Continued on next page]

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND—(DONATIONS continued)

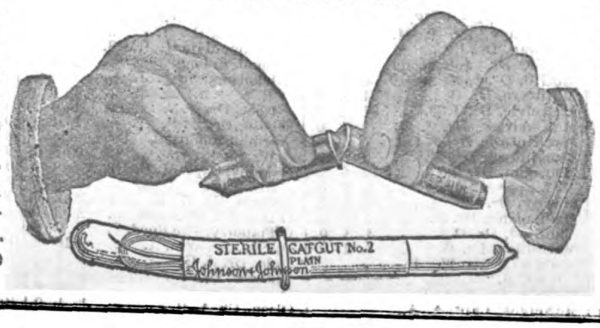
	£	s.	d.
Robertson, Dr. R. K. ...	1	1	0
Robinson, W., F.R.C.S..	5	0	0
Robson, Dr. F. W. H. ...	1	1	0
Rodger, Dr. T. R.	3	0	0
Rogers, Dr. A.	0	10	6
Rogers, Lt.-Col. L., I.M.S.	10	10	0
Rolston, Dr. G. T.	1	1	0
Ronayne, Dr. J. F. ...	1	1	0
Ross, Mrs. A.	5	0	0
Rountree, Miss	2	2	0
Rowcroft, Col. G. F. ...	5	0	0
Rowlands, Capt. R. P., R.A.M.C. (T.)	8	8	0
Royal Medical Benevolent Fund Guild... ...	50	0	0
Rudduck, Dr. J. B. ...	5	5	0
Russell, Dr. J. W.	10	0	0
Russell, Dr. W. B.	0	5	0
Ryall, Charles, F.R.C.S.	28	5	0
Ryan, Dr. M. J.	1	0	0
Salaman, Dr. S. M. ..	1	0	0
Salisbury, Dr. H. K. ...	5	5	0
Salters, The Worshipful Company of	5	5	0
Salvage, Dr. T. V.	2	2	0
Sampson, Dr. H. M. ...	0	10	6
Samuel, Mrs. F. S.	10	0	0
Sancta Maria Lodge, per J. Ernest Lane, F.R.C.S.	10	10	0
Sanders, Dr. A. W. (S. Africa)	25	0	0
Sandwith, Mrs. G.	2	0	0
Satchell, Mrs. W. A. ...	10	0	0
Savage, Sir G. H., M.D.	2	2	0
Sayres, Dr. A. W. F. ...	2	2	0
Scotland, Lt.-Col. D. W., I.M.S.	1	1	0
Scott, Dr. A.	5	0	0
Scott, Dr. D. W.	2	2	0
Scott, Dr. E. D.	2	2	0
Scott, Dr. G. Waugh (Federated Malay States)	5	0	0
Scott, Dr. Lindley... ...	20	0	0
Scott, Dr. R. R.	3	3	0
Scowley, Dr. E. T.	1	1	0
Seely, Mrs. F. C., from Friends, &c.	6	10	0
Secretan, W. B., F.R.C.S.	1	1	0
Seekings, Dr. S.	5	0	0
Seligman, Dr. C. G. ...	5	0	0
Semon, Sir Felix, K.C.V.O.	1	1	0
Sergeant, Dr. J. Noel ...	5	5	0
Sharkey, Sir Seymour J., M.D.	5	5	0
Sheaf, Dr. E. W.	2	2	0
Sheldon, Dr. P. S.	0	10	6
Shelmerdine, Dr. H. ...	1	1	0
Shepherd, Dr. C. C. ...	1	1	0
Sheppard, Dr. A.	1	1	0
Sherwood, Dr. A. P. ...	5	0	0
Shinton, Dr. M.	2	2	0
Siddall, Dr. J. B.	1	1	0
Simmons, Dr. H.	3	3	0
Simmons, Dr. S. S. ...	1	1	0
Simpson, G. Maxwell, M.D.	26	5	0
Simpson, Dr. G. Maxwell, collected from Friends	95	17	0
Sinclair, Dr. J. B.	1	0	0
Skinner, Dr. A. H. (China)	7	10	0
Smith, Dr. E. M.	5	0	0
Smith, Dr. H. F.	1	1	0
Smith, Capt. J. F., R.A.M.C.	1	1	0
Smith, Dr. J. H.	1	1	0
Smith, Dr. R. H.	2	2	0
Smith, Dr. R. J. P. ...	1	1	0
Smith, Dr. R. P.	1	1	0
Smith, Dr. R. Percy ...	1	1	0
Smith, Dr. S. B.	1	0	0
Smith, Major S. Boylan, D.A.D.M.S.	5	0	0
Smith, Dr. T. H.	1	1	0
Smith, Sir T. R. H., Bart., M.D.	7	7	0
Smith, Dr. W. A.	0	10	6
Smyth, Dr. J.	1	1	0
Snell, M. Bowden, Esq., per Dr. Newton Pitt ...	10	10	0
Solly, Dr. R. V.	1	1	0
Spencer, Dr. W. F. ...	0	14	0
Spooner, Dr. W. Caswell	1	1	0
Spriggs, Capt. N. I., R.A.M.C. (T.)	1	1	0
Starling, Lt.-Col. E. H.	2	2	0
Starling, Dr. H. J., R.A.M.C.	2	2	0
Stawell, Dr. R. de S. ...	2	2	0
Stead, Dr. C. C.	1	1	0
Stedman, Dr. F. D. (Hong-Kong)	5	0	0
Steinbach, Dr. H.	1	1	0
Steinhauser, Dr. J. M....	1	1	0
Stephen, Dr J.	1	1	0
Stevenson, Dr. F.	2	2	0
Stevenson, Dr. F. C. (Australia)	5	0	0
Stevenson, Dr. W.	1	0	0
Stewart, Dr. A. G.	2	2	0
Stewart, Dr. G.	10	0	0
Stewart, Dr. Murray B.	1	1	0
Stewart, Mrs. M. K. ...	2	2	0
Stewart, Dr. R. C.	5	0	0
Stewart, Dr. T. P.	1	1	0
Stewart, Dr. W. G. ...	1	1	0
Stewart-Sandeman, Dr. Laura	2	2	0
Stillwell, Dr. H. F.	2	2	0
Stirling, Mrs. C.	5	0	0
Stockwell, Dr. J. F. ...	5	0	0
Stoddard, Dr. W. H. B.	5	0	0
Strain, Dr. W. L.	2	2	0
Strang, Dr. T. M.	2	0	0
Strugnell, Dr. F. W. ...	0	10	0
Stuchberg, The Misses	2	2	0
Styles, Dr. M.	1	1	0
Suckling, Dr. J. J. ...	2	2	0
Sugden, Dr. F.	0	10	0
Sumner, Dr. S.	1	1	0
Sweet, Dr. E. H.	5	0	0
Sworn, Dr. R. A.	0	10	0
Symes, Dr. J. O.	1	1	0
Symonds, Col., and Mrs. Charters J., C.B., A.M.S.	100	0	0
Symonds, Dr. H.	20	0	0
Syson, Dr. J. Cockburn	1	1	0
Tallent, Dr. J. H.	10	0	0
Taplin, Dr. A. B.	1	1	0
Tattersall, Dr. W. H. ...	1	1	0
Taylor, Sir F., Bart., P.R.C.P.	5	5	0
Taylor, Dr. James	3	3	0
Taylor, Dr. M. A.	1	1	0
Taylor, Dr. S. H. S. ...	1	1	0
Teacher, Dr. J. H.	10	0	0
Teale, Dr. T. Pridgin ...	10	0	0
Tearr, Dr. J.	1	0	0
Thom, Dr.	1	1	0
Thomarson, Capt. J., R.A.M.C.	2	2	0
Thomas, Dr. A.	0	10	6
Thomas, Sir A. Garrod, M.D.	5	5	0
Thomas, Dr. G. W.	2	0	0
Thomas, Dr. H. J.	10	10	0
Thomas, Dr. J. H., and Scott, Dr. C. T.	1	1	0
Thomas, Dr. W. E. ...	0	10	6
Thomas, Dr. W. E., proceeds from performance of an Oratorio in aid of the R.M.B. Fund ...	44	17	5
Thomas, Dr. W. T.	20	0	0
Thompson, Dr. J. A. D.	1	1	0
Thompson, Dr. J. Knox	0	10	6
Thompson, Dr. S. R. ...	1	1	0
Thompson, Dr. T.	2	2	0
Thomson, Dr. A.	1	1	0
Thomson, Dr. J.	5	5	0
Thomson, Sir StClair ...	10	10	0
Thornton, Dr. J. A. ...	1	1	0
Thorp, Miss M. S.	0	10	0
Tibbles, Dr. S. J.	1	1	0
Tilbury, Dr. R.	1	1	0
Timmins, Dr. J. Lewes	1	1	0
Titley, Dr. F. L.	5	0	0
Todd, Dr. A. B. Slingsby	0	10	6
Todd, Dr. R.	1	1	0
Toller, Mrs. Wallis ...	2	2	0
Towers-Hardie, Dr. W.	2	2	0
Trisley, Dr. S. V.	2	2	0
Tristan, Dr. R. I.	1	1	0
Trotter, Dr. W.	5	0	0
Tucker, Dr. E. E.	1	0	0
Tuisley, Dr. S. V.	2	2	0
Turnbull, Dr. A. R. ...	0	10	0
Turner, Dr. A. Jefferis (Colonies)	5	0	0
Turner, Dr. J. Hill ...	0	15	0
Tweedy, Sir John, LL.D., F.R.C.S.	100	0	0
Uhthoff, Dr. John... ...	100	0	0
Vawdrey, Dr. Ethel N.	1	1	0
Vawdrey, Dr. T. G. ...	1	1	0
Vernon, Dr. M. H.	2	2	0
Voelcker, Major A. F., R.A.M.C.(T.).	1	1	0
Vosper, Dr. S.	1	1	0
Waddington, Dr. J. H...	3	3	0
Wainewright, Mr. J. H.	2	2	0
Wainewright, Dr. R. S.	2	2	0
Walford, D. W. G. ...	1	1	0
Walker, Dr. Mary B. ...	1	1	0
Walker, Dr. R.	0	10	0
Wallace, Dr. R. A. R. (Australia)	6	6	0
Walters, Dr. F. R.	1	1	0
Walton, Dr. Crawford ...	1	1	0
Warburton, Dr. G. B. ...	2	2	0
Warder, Dr. A. H.	1	0	0
Warner, Dr. E. E.	1	1	0
Warner, Dr. H.	2	2	0
Warnock, Dr. J. (Cairo)	6	10	0
Warren, Dr. E. C.	1	1	0
Warrington, Dr. W. B. ..	4	4	0
Watkins, Dr. J. P.	1	1	0
Watson, Dr. Henry ...	1	1	0
Watson, Dr. W. M. Crawford	1	1	0
Way, Dr. F. W.	0	10	6
Way, Dr. Wm.	2	2	0
Waylen, Dr. G. S. A. ...	5	0	0
Webb, Dr. J. B.	1	1	0
Weekes, Dr. C. Peterson	0	10	6
West African Medical Staff in Nigeria, per Dr. W. I. Taylor, Lagos, Nigeria	280	10	6
Wharrf, Dr. H. F.	2	2	0
White, Capt. J. D. C., R.A.M.C.(T.).	5	5	0
Whitfield, Dr. Arthur ...	100	0	0
Whitmore, Dr. W. B. ...	5	0	0
Whittington, Capt. T. H. R.A.M.C.(T.)	3	3	0
Widdes, Dr. H.	5	0	0
Wigmore, Dr. A. J. ...	0	10	6
Wigram, Dr. L. G.	2	2	0
Willans, Dr. C. R.	2	0	0
Williams, Mrs. A. J., per Dr. W. E. Thomas ...	5	5	0
Williams, Major C. L., I.M.S.	1	0	0
Williams, Dr. D. L. ...	1	1	0
Williams, Capt. E. W., R.A.M.C.	1	1	0
Williams, Dr. G. J. ...	1	0	0
Williams, Dr. R. Stenhouse	1	1	0
Williams, Dr. W.	1	1	0
Wills, Dr. J. T.	5	5	0
Wills, Staff-Surgeon Keaneth, R.N.V.R. ...	5	0	0
Willson, Dr. H. S.	2	2	0
Willson, Dr. J. W. H. ...	2	2	0
Wilsin, Dr. J. E.	1	1	0
Wilson, Miss Agnes ...	2	2	0
Wilson, Dr. A. C.	5	5	0
Wilson, Dr. A. S.	1	1	0
Wilson, Dr. C.	1	0	0
Wilson, Dr. J. A.	1	0	0
Wilson, Dr. J. Wherry ...	2	2	0
Wiltson, Dr. H.	1	1	0
Wishart, Col. Sidney ...	5	5	0
Witts, Dr. S.	5	0	0
Wittware, Dr. H.	5	0	0
Wood, Dr. J. M.	0	10	6
Wood, Dr. S. S. M.	1	1	0
Woodhouse, Dr. C.	1	1	0
Woodhouse, Dr. F. D. ...	1	1	0
Woodhouse, Dr. H. C. ...	2	2	0
Wright, Dr. M. B.	5	5	0
Wright, Capt. W. D., I.M.S.	3	3	0
Wyllie, Mrs., per Dr. J. Uhthoff	10	0	0
Wynter, Dr. A. Ellis ...	5	5	0
Wyse, Dr. R.	2	2	0
Yellowlees, Dr. D.	5	5	0
Young, Dr. E. H.	2	2	0
Young, Dr. H. W. P. ...	1	0	0
Young, Dr. T. F.	5	0	0

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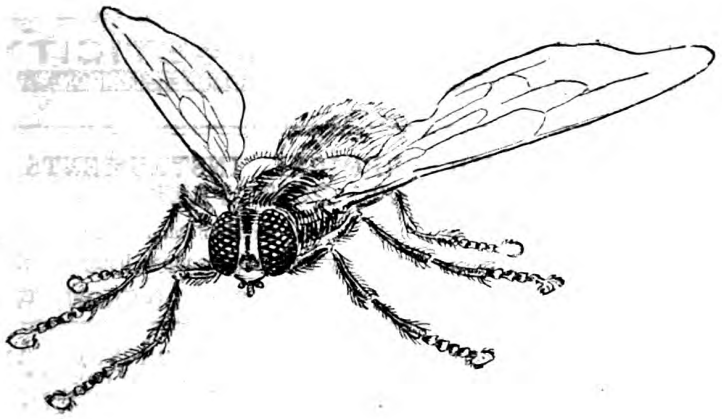
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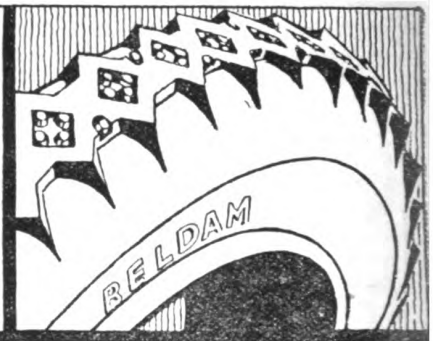
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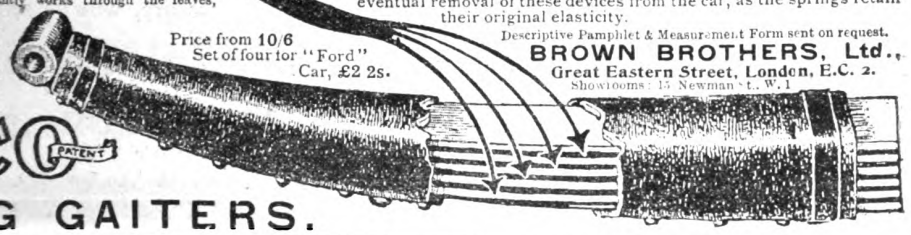
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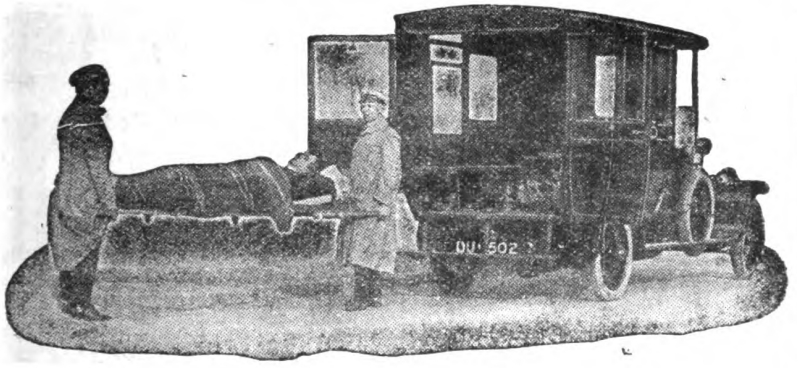
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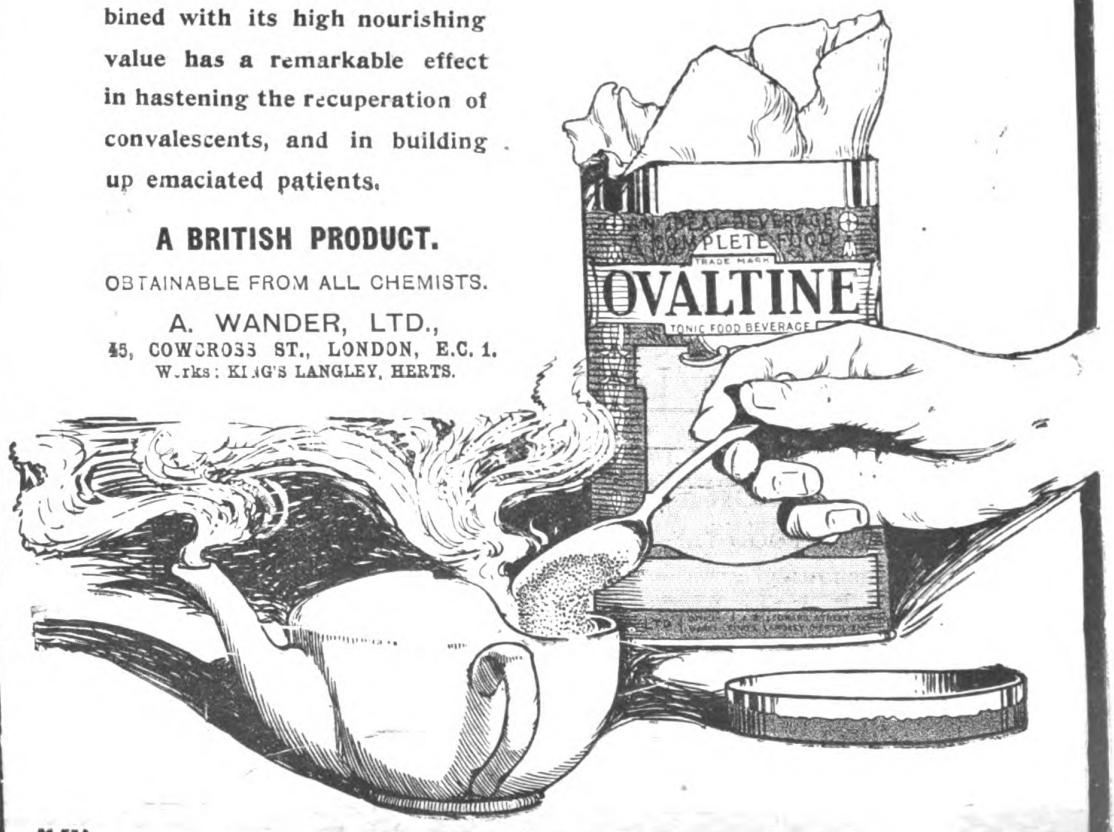
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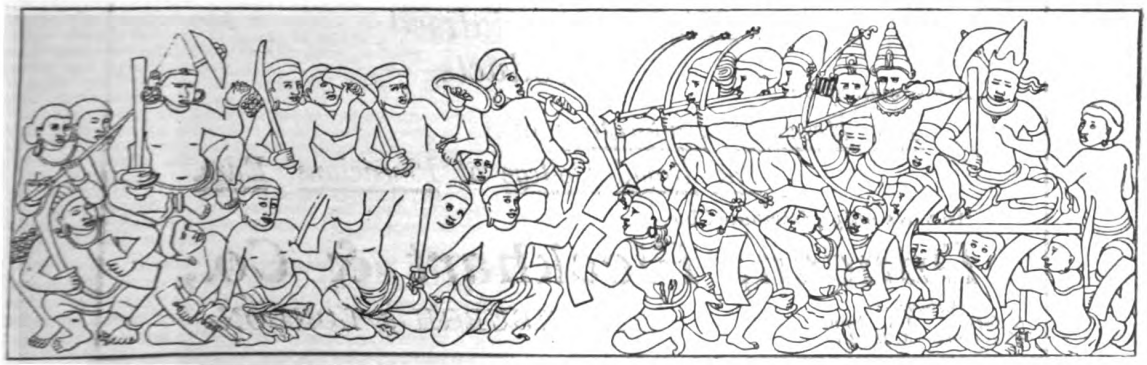
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A Report
ON
THE TREATMENT OF 102 CARRIERS OF AMŒBIC DYSENTERY WITH EMETINE BISMUTH IODIDE.

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AND
W. O. REDMAN KING, B.A. CAMB.,
PROTOZOOLOGISTS.

Report to the Medical Research Committee from the Military Dysentery Convalescent Hospital, Barton-on-Sea, Lieut.-Col. J. Chaytor White, I.M.S., Commanding.

(With an Excerpt from Notes on 2000 Cases of POST-DYSENTERIC DIARRHŒA at the Military Dysentery Convalescent Hospital, Barton-on-Sea, by W. WADDELL.)

1. *Introduction.*

THE cases dealt with in this paper were discovered to be carriers of *Entamœba histolytica* in the course of the ordinary routine examinations of fæces at this convalescent hospital; none of them were found to be carriers of dysentery bacilli. They were all treated with emetine bismuthous iodide, and it has been thought worth while publishing the results, as this is the first time, so far as we know, that the drug has been tested on such a large scale. The treatment has had the advantage of being carried out under the supervision of one medical officer at a place where the necessary protozoological examinations could be made on the spot.

2. *Previous History of the Cases.*

All the cases came into the hospital as convalescents after dysentery, 52 direct from hospital ships, the remainder from home hospitals.

With 9 exceptions all the cases were invalided from the Eastern Mediterranean area (87 cases) or Mesopotamia (6 cases). The other 9 cases were invalided from France; of these, 5 had exhibited dysenteric symptoms previously in Egypt, and 2 in Gallipoli, while another (10*) contracted dysentery in India in the autumn of 1914, just before being sent to France with a division of Indian troops; of the remaining case from France (1787) we have no further details.

Two other cases (1082, 1684) had previously had dysentery in India in 1908 and 1914 respectively, but as one went subsequently to Gallipoli and the other to Salonika it cannot be said with certainty that they became infected with *Entamœba histolytica* in India. Two cases had formerly had dysenteric symptoms in South Africa, one (787) in 1909, the other (1881) during the Boer War, while a third (1540) had "dysentery or enteric" in the Boer War.

Three cases (899, 1197, 1483) reported having diarrhœa with blood and mucus in France for a few days in 1915 before going to Salonika or Gallipoli; but it is impossible to say whether it was of amœbic origin. Seven cases which had dysentery in Gallipoli afterwards went to Salonika, where they all relapsed.

One case (902) had no history of acute dysentery; he was invalided from Salonika to Malta with nephritis, and, while in hospital there, was found to be passing cysts of *E. histolytica*; there seems no doubt he was a "contact carrier."

There is no direct evidence that in all cases the acute phase of the disease was due to *Entamœba histolytica*; but since the majority of the cases have a history of more or less chronic or intermittent diarrhœa (even in England), with occasional relapses of an acute character, it may be presumed that in them this organism was the cause of the trouble.

A large number had been treated with emetine hypodermically, one or two having received as many as 100 injections. One case (1987) had been operated upon for liver abscess.

3. *Method of Treatment.*

The form of the drug used was a keratin-coated tabloid (prepared by Burroughs, Wellcome and Co.); each tabloid contained 1 grain of emetine bismuth iodide.

As a rule the daily dose, consisting of 3 grains, was given to each man after the mid-day meal. The time of giving the daily dose was decided by the men after trials of various hours; they were less disturbed by taking the dose at mid-day than at any other time, and objected strongly to its being given at night owing to night-calls to the latrine. After having their dose at 1 P.M., all lay down and rested; during the earlier part of the day they were allowed out within the lines, and, being put into blue, they were easily kept under observation.

The 102 cases were treated in various batches between Sept. 15th and Nov. 7th, 1916, and the full course extended over 12 days, until 36 grains of emetine bismuth iodide had been taken. The men treated in the first batch, however, had only eight or nine doses, some of which consisted of two tablets instead of three, so that they had only from 21 to 25 grains each; and two or three others who did not tolerate the drug well, but suffered from great depression, also had less than the full amount.

Each man was provided with a card on which were noted the daily dose and, opposite, the results—number of times sick and number of evacuations—which it produced. Each daily dose was administered by the medical officer's own hand. All the men were placed under the same conditions of living. The diet adopted comprised mainly milk, eggs, fish, puddings, mutton, and cabbage, steamed and sieved.

4. *The Effects of the Treatment on the Men.*

The behaviour of each case under this drug was very much the same.

They practically all were either purged or they vomited, or both. Usually a man who vomited much did not have so much diarrhœa, and a man who had much diarrhœa did not vomit so much; and usually whichever of the symptoms predominated at first, that was the most marked symptom throughout. Very few were violently attacked both ways. Out of the 102 cases, only 2 or 3 were not affected at all, either by vomiting or diarrhœa, and a few had one natural evacuation daily; while 5 vomited only once (see tables for details). The worst cases had on some days 10 or 12 motions in 24 hours, or vomited 5 or 6 or even more times in the day. Of real tolerance of the drug there was none; certainly a number of men as time went on were not so often sick, but that was the best that could be said. The vomiting usually began about an hour after taking the dose, the diarrhœa not often sooner than three hours. Two men had violent colic and required fomentations. It was noted that in the vomit the brick-red colour of the drug was fairly often seen, showing that the keratin coat dissolved before reaching the intestine.

Various stomach and bowel sedatives were tried to control irritation, but none were of any real use except tinct. opii, and that was only used in extreme cases. The tabloids were tried in powder, but the vomiting was sooner produced and increased in intensity; so this was discontinued. A few of the most disturbed cases were kept entirely in bed, which relieved, but did not save them from, attacks of diarrhœa and vomiting.

In three cases of old carriers (1378, 787, and 10) the effect of the treatment on the general health was very pleasing. All three, particularly a staff sergeant of the Indian Army, were weak, thin, pale, and depressed; after the course appetite came back, weight was regained, and all three reported that they felt like new men. In most cases, however, the men were, for the time being, considerably pulled down by the vomiting and diarrhœa produced by the treatment. All were heartily glad when the ordeal ended and they were set free.

The tables show the curative properties which the drug certainly possesses; but until its preparation has been improved, and its intensely irritating properties abated or removed, a just estimation of its value in chronic dysentery cannot be made.

5. *Collection and Examination of Specimens.*

It is obvious that the value of the microscopical examinations depends very largely upon the accuracy with which the identity of any particular specimen can be guaranteed. We think it wise to insist upon this fact, because in practice it is not easy, as might be supposed, to eliminate doubt.

There are in our experience, some men—we believe them to be few—who seem unable to realise the importance of the tests, and will exercise the utmost ingenuity in trying to substitute for specimens of their own fæces those of other men. In some cases this may be done as a joke; in others a man, who suspects himself to be positive, will endeavour to pass off as his own a specimen from a man known, by reason of his approaching discharge, to be free from infection. And even if the collection of specimens is so efficiently supervised that substitution is impossible, one man may persuade another to impersonate him with the same object in view. Elaborate precautions are therefore taken at this hospital to prevent the mixing of specimens,

* The numbers in brackets refer to the case numbers, for which see Tables I. and II.

and any sample about which there can be the slightest doubt is always rejected. We have reason to believe that in many hospitals the necessity for taking these precautions is not fully realised, and the tests made are, to a certain extent, unreliable in consequence.

The specimens were examined with the greatest care, and no test is recorded as negative unless at least two coverslip preparations, each from a different part of the fæces, had been searched without result. As a general rule the suspensions were made in normal saline, but iodine preparations were often used in addition. All problematical specimens, which were especially frequent immediately after treatment, were examined by both of the protozoologists at the hospital.

6. *Results of the Examinations.*

In the accompanying tables will be found the exact amount of the drug received by each man, the period of treatment, the number of doses, the amount of vomiting and diarrhœa produced, and a list of all the tests made, both before and after treatment. A date upon which *Entamœba histolytica* was found is given in italics. An asterisk after the date denotes the presence of cysts, a dagger that of free amœbæ. The presence of only a small number of cysts is marked by one asterisk, of a moderate number by two asterisks, and of a large number by three asterisks; while the number of free amœbæ present is indicated by a similar number of daggers.

The cases fall into two groups: those that may have been cured, and those that definitely relapsed. It is convenient to deal first with the latter group.

(*a*) *The cases that were not cured.*—There can be no doubt that in 19 out of the 102 cases the treatment failed to cure the men of their infections of *Entamœba histolytica*. It will be seen from the table that each of these cases had repeated positive tests after the end of treatment.

It is true that the finding of a small number of specimens of *Entamœba histolytica* on one or two occasions after treatment does not necessarily indicate that the man had not been cured. Thus, in Case 1299, two or three free amœbæ were found on the eighth day after treatment, and although the next two examinations were negative, one or two cysts of *Entamœba histolytica* were found on Nov. 24th, 26 days after treatment; but since then the case has been examined 15 times in the ensuing nine weeks, each time with a negative result; it therefore seems justifiable to include him among the probably cured.

In about half-a-dozen other cases a few degenerate cysts, which might possibly have been those of *Entamœba histolytica*, were found after the end of treatment (nearly always among large numbers of *E. coli* cysts). These cases were kept under observation longer than would otherwise have been the case; but as the small cysts did not recur, the tests have been recorded as negative.

In the 19 cases that were not cured, undoubted examples of *Entamœba histolytica* were found, often in large numbers, on at least two occasions after treatment; and the presence of the organism has been confirmed in each case by other workers since the men left the hospital.

Fifteen of these cases were examined at least once during treatment, and 14 of them were then found to be negative. It is well known, however, that carriers of *Entamœba histolytica* do not always pass cysts every day, at any rate in sufficient numbers to be found in practice (*v.* the examinations before treatment in the tables[1]); the fact that many of these men had one negative examination during treatment does not, therefore, necessarily indicate that they all cleared up temporarily owing to the action of the drug. It was, however, found impracticable to make several examinations of the men while under treatment; and, indeed, for all practical purposes, it is the examinations after treatment that are the most important.

One semi-acute case (787) had a double course of treatment. His general health improved, but at every examination numerous active amœbæ were found in the stools, and this continued after he left Barton. He has since been operated upon for amœbic abscess of the liver.

Another semi-acute case (10) also improved considerably in general health after treatment, but continued to pass at intervals sporadic active specimens of *Entamœba histolytica*. At Barton he had three full courses of the drug, the third course being given towards the end of November. After leaving the depôt he was reported to have passed on Dec. 18th and 19th large numbers of cysts of *Entamœba histolytica* and smaller numbers of them on the 20th and 21st (no cysts were ever found at Barton), which disappeared under a further course of the drug. Unfortunately, the man has gone back to India before his complete cure could be established.

It is difficult to assign any reason for the failure of these 19 cases. It is possible that in some of them the full effect of the drug was not obtained owing to a portion of the drug being lost through vomiting or diarrhœa; on the other hand, some of the worst cases in this respect are among those apparently cured (e.g., 968, 1540, 1628, 1686). Moreover, the first batch of men treated all had considerably less than a full course of the drug, while among them only two cases definitely relapsed.

Another possible reason for some failures may be the form of drug used. In all the cases previously reported upon[2] the drug was given as a powder enclosed in gelatin capsules. Perhaps in some cases the compressed keratin-coated tablets used at Barton may not have got thoroughly broken up, and some of the effect may thus have been lost. Nevertheless, the general production of intestinal disturbances and malaise tends to show that the drug did have some effect. It is possible that had the capsules been pounded up and put into cachets a more satisfactory result would have been obtained. (It is true that powdering the tablets was tried on one occasion at Barton, but from the accounts of some of the men the powder formed a kind of cement on the tongue and was difficult to swallow; a cachet or capsule would overcome this difficulty.) On the other hand, one case (C 26) at Chichester[3] was not cured by a course of 40 grains of the powdered drug, though he may have been cured by a subsequent course of 68 grains.

The duration of infection or the region where it was acquired may possibly have some effect, for it is noteworthy that four out of the five men who are known to have had dysentery previously in South Africa or India (viz., 10, 787, 1684, 1881) were among those who relapsed. There is no evidence, however, that the failure is in any way connected with the intensity or duration of the acute symptoms; indeed, among the relapses is included the one case that had never had any symptoms of acute dysentery (902).

Dobell has shown that emetine hydrochloride fails to cure about two-thirds of the cases treated. It seems to us that while emetine bismuth iodide is a much more efficient drug, nevertheless, at any rate in the form used at Barton, it may fail to extirpate about 20 to 25 per cent. of *Entamœba histolytica* infections. Again, a man who has once relapsed after emetine hydrochloride injections is very seldom cured by a further course of the drug,[4] and similarly the two cases (10 and 787) which had more than one course of emetine bismuth iodide at Barton were still not cured. All the cases that relapsed at Barton have again relapsed after another full course of the drug, with the exception of three men (899, 1393, and 1765). Of these, 1393 has been under observation since treatment for eight weeks, during which he has had nine examinations, all negative, while 1765 has had, similarly, six negative examinations in five weeks, and it seems likely therefore that both these cases have been cured.† The other case has only had four negative examinations (three within eight days of the end of treatment), and his "cure" is therefore much more open to doubt. It seems possible, however, that there may be some cases which are permanently resistant to emetine bismuth iodide.

(*b*) *Cases that were apparently cured.*—While there can be no doubt about the cases that relapsed, it is by no means so certain that the remainder were permanently cured, for it is conceivable that some relapsed after they were last examined. The evidence of cure depends upon the value of the negative examinations, and until we know more about the way the presence of *Entamœba histolytica* in the fæces of relapsing carriers may vary from day to day it is impossible to speak with certainty. We can, however, draw certain conclusions from the behaviour of the cases that did relapse.

The table shows that cysts generally reappeared in the fæces fairly soon after treatment had ceased; thus, out of the 19 cases 10 were discovered still to be infected on the first, 5 on the second, 3 on the third, and 1 on the fourth examination after treatment. The average number of days between the last dose and the first positive test was only 6·5, and it is probable that had daily examinations been made it would have been much smaller. The longest period between the last dose and the last negative test was never more than eight days, except in one case where it was four days longer.

The remaining cases, on the other hand, had an average of 4·3 negative tests after the end of treatment, the average number of days between the last dose and the last test being 17·3. Only one case did not have at least one examination later than the eighth day after the end of treatment, and many had three or four; indeed, if we take the 65 cases that had 12 doses we find that they had altogether 144 negative tests later than the eighth day after the end of treatment, an average of over two per man.

† Since this paper was written both the cases have relapsed. 1393 had 12 negative examinations after treatment at Mont Dore Hospital between the end of November and the middle of February, 1917. He had another negative test at Barton on Feb. 17th. He was subsequently reported to be passing blood in the stools, and a further examination on March 6th revealed the presence of large numbers of cysts of *E. histolytica*. In view of the long period during which this case was negative it is probable that the opinion expressed at the end of para. (*b*), concerning late relapses, will have to be somewhat modified.

It is improbable, therefore, that, had many cases relapsed later, some would not have been detected; and the foregoing facts, together with what we know of other cases followed over longer periods,[5] warrant us in the belief that the majority of these 83 cases may really have been permanently cured.

7. *On the Amount of Emetine Bismuth Iodide Necessary to Effect a Cure.*

Nineteen cases had only eight or nine doses, amounting to 21–25 grains of the drug, and other 7 had also less than 36 grains; yet of these 26 cases only 2 (899 and 1393) definitely relapsed. Most of the others had at least two negative tests

TABLE I.—*Cases that are not known to have relapsed after Treatment.*
(The italics in the table indicate the dates on which *Entamœba histolytica* was found.)

Lab. No. of case.	Total No. of grains of E.B.I. given.	Period of treatment.	No. of doses.	During treatment.				Dates of protozoological examinations.		No. of neg. tests after end of treatment.	No. of days between last dose and last test.
				Total No. of vomits.	Max. No. on one day.	Total No. of motions (approx.).	Max. No. on one day.	Examinations before 3rd day of treatment.	Examinations after 3rd day of treatment.		
318	21	Sept. 15–22.	8	11	5	8	2	Aug. *22***	Sept. 21, 23, 30; Oct. 2, 4, 5, 10, 21.	7	29
814	21	" "	8	11	4	17	5	Aug. *23**	Sept. 21, 23, 30; Oct. 2, 4, 5, 10.	6	18
940	21	" "	8	9	3	28	6	Sept. 6, 7††	Sept. 21, 30; Oct. 3, 4.	3	12
960	21	" "	8	12	5	19	4	Sept. *6****	Sept. 21, 23, 29, 30; Oct. 2.	4	10
1103	21	" "	8	2	1	14	2	Aug. *23***	Sept. 21, 23, 30; Oct. 2, 4, 10.	5	18
1281	21	" "	8	11	4	26	5	Aug. *26**, *28*†*	Sept. 21, 23, 29; Oct. 2, 4.	4	12
1359	21	" "	8	8	4	14	4	Aug. *19**, 24.	Sept. 22, 23, 30; Oct. 2, 4, 10.	5	18
1003	22	Sept. 15–28.	8	19	5	31	10	Sept. *8*†	Sept. 21, 23; Oct. 2, 3, 4.	4	12
738	24	Sept. 15–23.	9	7	4	18	4	Aug. *17**, *27**	Sept. 22, 23, 25, 30; Oct. 5, 6.	4	13
975	24	" "	9	8	3	16	3	Sept. *7****	Sept. 21, 25; Oct. 2, 4, 5.	4	12
1082	24	" "	9	11	4	20	5	Aug. *30**	Sept. 22, 25, 30; Oct. 2, 4, 10.	5	17
1138	24	" "	9	6	2	13	2	Aug. *21****	Sept. 22, 25, 29; Oct. 3, 4, 11.	5	18
1181	24	" "	9	6	3	33	8	Aug. *21***	Sept. 22, 25, 29; Oct. 2, 4.	4	11
1436	24	" "	9	3	3	36	10	Aug. *22*†	Sept. 22, 25, 29; Oct. 3, 4, 5, 11, 12; Nov. 2.	8	40
1532	24	" "	9	11	3	13	3	Sept. *6****	Sept. 22, 25, 30; Oct. 2, 4, 5.	5	12
1574	24	" "	9	7	4	16	2	Aug. *28**	Sept. 22, 25, 30; Oct. 2, 4, 5, 10.	6	17
879	25	" "	9	1	1	9	1	Sept. *13****	Sept. 22, 25, 29; Oct. 3, 4, 11.	5	18
1540	27	Sept. 29–Oct. 10.	12	35	12	23	5	Aug. *26**; Sept. *8**, 30.	Oct. 7, 13, 17, 21, 28.	4	18
968	30	Oct. 12–24.	11	18	5	51	10	Sept. *27**, *28***; Oct. *11.**	Oct. 25, 30; Nov. 1.	3	8
935	33	Oct. 12–23.	12	16	4	39	6	Sept. *7*†, *27**; Oct. 13.	Oct. 25, 30; Nov. 2.	3	10
1475	33	Sept. 28–Oct. 9.	12	18	4	44	7	Aug. *24**; Sept. *27***	Oct. 5, 13, 17, 19, 26.	4	17
1788	34	Sept. 29–Oct 10.	12	3	2	23	3	Sept. *16**	Oct. 8, 16, 18, 20, 23, 28; Nov. 2.	6	23
1197	35	Sept. 28–Oct. 9.	12	28	4	34	12	Sept. 4, *8***, *27**	Oct. 6, 16, 17, 21, 30.	4	21
1380	35	Sept. 29–Oct. 10.	12	17	2	38	5	Aug. *21**; Sept. 28.	Oct. 7, 13, 17, 19, 26.	4	16
845	36	Sept. 28–Oct. 9.	12	—	—	16	2	Sept. *11***, *28**	Oct. 6, 13, 17, 19, 26.	4	17
849	36	Sept. 29–Oct. 10.	12	13	3	23	2	Sept. *11***, 30.	Oct. 6, 13, 17, 19, 26.	4	16
855	36	Oct. 12–23.	12	5	3	43	6	Sept. 4, 8, *11**, 16, *22***; Oct. 11	Oct. 25, 30; Nov. 1, 6, 8, 23.	6	31
965	36	" "	12	13	3	27	3	Sept. *11***, *23***; Oct. *11***	Oct. 25, 30; Nov. 1, 6.	4	14
978	36	" "	12	2	1	23	4	Sept. 14, *27***; Oct. *11.**	Oct. 26, 30; Nov. 1, 2.	4	10
1299	36	Sept. 28–Oct. 9.	12	8	2	18	2	Sept. *8**, 27.	Oct. 6, 13, *17*†, 19, 26.	3	17
1328	36	Oct. 12–23.	12	8	2	42	6	Aug. *18***; Sept. *27***; Oct. *11***	Oct. 25, 30; Nov. 2, 6, 24.	5	32
1329	36	Sept. 28–Oct. 9.	12	—	—	17	4	Aug. *18**; Sept. 27.	Oct. 7, 13, 17, 19, 30.	4	21
1330	36	" "	12	—	—	15	4	Aug. 19; Sept. *8***, *27**	Oct. 6, 14, 17, 19, 30.	4	21
1356	36	Oct. 12–23.	12	2	1	34	6	Aug. 19; Sept. *16**	Oct. 25, 30; Nov. 2.	3	10
1372	36	" "	12	2	1	15	2	Aug. 21; Sept. *15***; Oct. 11.	Oct. 25, 30; Nov. 1.	3	9
1378	36	Sept. 30–Oct. 11.	12	6	3	17	3	Aug. *21**; Sept. 27.	Oct. 8, 14, 17, 19, 26.	4	15
1402	36	Oct. 12–23.	12	8	2	31	4	Aug. 22; Sept. *13***, 27; Oct. 11.	Oct. 25, 30; Nov. 1.	3	9
1450	36	Sept. 28–Oct. 9.	12	13	2	16	2	Aug. *23**; Sept. *11**, 27.	Oct. 5, 16, 17, 19, 28.	4	19
1454	36	" "	12	—	—	23	4	Aug. *23*†††; Sept. 27, 30.	Oct. 7, 13, 17, 19, 26.	4	17
1472	36	" "	12	7	2	29	5	Aug. *21***; Sept. *27**	Oct. 7, 13, 17, 19, 26.	4	17
1483	36	" "	12	14	4	19	3	Aug. *21**; Sept. *9***, *22**, *28**	Oct. 5, 14, 17, 19, 28.	4	19
1490	36	" "	12	—	—	18	3	Aug. *21**; Sept. *27**	Oct. 6, 13, 17, 19, 26.	4	17
1514	36	" "	12	3	2	21	3	Aug. *25**; Sept. *7*††, *27**	Oct. 6, 14, 17, 19, 28.	4	19
1517	36	" "	12	7	2	19	4	Aug. *26**; Sept. *7***, *28***	Oct. 6, 14, 17, 19, 21, 25, 28, 31; Nov. 2, 6.	9	28
1522	36	" "	12	1	1	24	4	Aug. *25*†; Sept. 7, 28.	Oct. 6, 14, 18, 20, 28.	4	19
1525	36	" "	12	5	2	22	2	Aug. *25**; Sept. *7**, *28**	Oct. 6, 9, 14, 18, 20, 28.	4	19
1527	36	" "	12	12	2	27	3	Aug. *25***; Sept. *11***, *30***	Oct. 5, 14, 20, 21.	3	12
1539	36	" "	12	1	1	35	4	Aug. *26***; Sept. *8***, 28.	Oct. 5, 14, 18, 20, 28.	4	19
1553	36	" "	12	12	3	27	3	Aug. 28; Sept. *7**, *28****	Oct. 6, 12, 16, 20, 27.	4	18
1585	36	" "	12	1	1	41	6	Aug. *29**; Sept. *28****	Oct. 7, 13, 18, 21.	3	12
1622	36	Oct. 12–23.	12	—	—	12	1	Aug. 30; Sept. *18***; Oct. *10****	Oct. 24, 27, 31; Nov. 2, 9, 13.	6	21
1628	36	" "	12	25	6	28	3	Aug. 30; Sept. 25; Oct. *4**, *5**, 6, 9, 10, *11**	Oct. 24, 31; Nov. 2, 7, 10.	5	18
1650	36	Sept. 29–Oct. 10	12	15	3	25	4	Aug. *31***; Sept. *10**	Oct. 7, 12, 16, 18, 24, 27.	5	17
1653	36	Sept. 28–Oct. 9.	12	2	1	37	5	Aug. *31***; Sept. 30.	Oct. 7, 12, 16, 18, 27.	4	18
1656	36	Oct. 12–23.	12	12	3	21	2	Aug. 31; Sept. *19***, 25; Oct. *13***	Oct. 24, 26, 27; Nov. 2.	4	10
1658	36	Sept. 28–Oct. 9.	12	2	1	32	5	Aug. *31**; Sept *30**	Oct. 5, 12, 16, 18, 24, 28.	5	19
1661	36	" "	12	12	3	32	4	Aug. *31**; Sept. *30**	Oct. 7, 12, 16, 18, 24, 27.	5	18
1686	36	" "	12	29	5	31	5	Sept. *1*†	Oct. 8, 12, 16, 21, 27.	4	18
1712	36	" "	12	12	2	40	6	Sept. *4**, 30.	Oct. 5, 12, 16, 18.	3	9
1718	36	" "	12	20	3	47	7	Sept. *4**, *19**, *30**	Oct. 6, 12, 16, 18, 27.	4	18
1727	36	" "	12	2	2	33	5	Sept. *4***, 19, *26***, *28**	Oct. 5, 12, 16, 18.	3	9
1734	36	Oct. 12–23.	12	10	2	15	2	Sept. 4, 19; Oct. *2***, *10***	Oct. 24, 27, 31; Nov. 2.	4	10
1735	36	Sept. 28–Oct. 9.	12	22	3	35	5	Sept. *4**, *25**, *28**	Oct. 6, 12, 16, 19, 27.	4	18
1754	36	Sept. 29–Oct. 10.	12	3	1	15	2	Sept. 8, *15**, 30.	Oct. 16, 18, 19, 26.	4	16
1755	36	Sept. 28–Oct. 9.	12	12	3	11	1	Sept. *5**, *30****	Oct. 7, 12, 16, 18.	3	9
1783	36	Oct. 12–23.	12	9	3	19	3	Sept. *15***; Oct. *11***	Oct. 25, 30; Nov. 1.	3	9
1787	36	" "	12	20	4	35	5	Sept. *15***; Oct. 11.	Oct. 26; Nov. 2, 4.	3	12
1793	36	" "	12	4	3	22	3	Sept. *18**; Oct. *10***	Oct. 27, 31; Nov. 2.	3	10
1834	36	" "	12	6	3	35	3	Sept. *29**; Oct. *5***, 9, *11***	Nov. 10, 13, 14.	3	22
1857	36	" "	12	19	5	27	6	Oct. *2**, *10****	Oct. 24, 27, 31; Nov. 2.	4	10
1868	36	" "	12	5	2	16	3	Oct. *2**, *10**	Oct. 24, 27, 31; Nov. 2.	4	10
1904	36	" "	12	1	1	21	3	Oct. *4****, 10.	Oct. 24, 27, 31; Nov. 2.	4	10
1911	36	" "	12	3	1	39	4	Oct. *5***, *11**	Oct. 25, 30; Nov. 1.	3	9
1941	36	" "	12	7	2	25	3	Oct. *6***, *11***	Oct. 27, 31; Nov. 2.	3	10
1963	36	Oct. 27–Nov. 7.	12	12	2	26	5	Oct. *10*†, *16*†***	Nov. 13, 15, 20; Dec. 4, 6.	5	29
1974	36	" "	12	5	2	29	4	Oct. *10****	Nov. 13, 15, 20, 29; Dec. 12.	5	35
1982	36	" "	12	9	3	28	3	Oct. *10**, *26***	Nov. 16, 18, 20, 28; Dec. 7.	5	30
1987	36	" "	12	11	2	27	3	Oct. *12**, *16***, 18.	Nov. 13, 15, 20; Dec. 1, 6.	5	29
2031	36	" "	12	6	2	39	5	Oct. *14*†***	Nov. 13, 15, 20, 29.	4	22
2063	36	" "	12	4	1	37	4	Oct. *16**	Nov. 13, 16, 20.	3	13
2084	36	" "	12	18	3	20	3	Oct. *17*†, 29.	Nov. 15, 18, 22, 24, 28; Dec. 5, 7.	7	30
2191	36	" "	12	2	1	33	4	Oct. *20****	Nov. 13, 14, 15, 21, 28; Dec. 7.	6	30
2195	36	" "	12	18	3	17	2	Oct. *20****	Nov. 13, 18, 20, 28; Dec. 7.	5	30

TABLE II.—*Cases that were not cured by the Treatment.*

(The italics in the table indicate the dates on which *Entamœba histolytica* was found.)

Lab. No. of case.	Total No. of grains of E.B.I. given.	Period of treatment.	No. of doses.	During treatment.				Dates of protozoological examinations.		No. of neg. tests between treatment and 1st pos. test.	No. of days between treatment and 1st pos. test.
				Total No. of vomits.	Max. No. on one day.	Total No. of motions (approx.).	Max. No. on one day.	Examinations before 3rd day of treatment.	Examinations after 3rd day of treatment.		
899	21	Sept. 15–22.	8	11	4	19	6	Sept. *12**	Sep.21,23,29;Oct.4,5**,*9*,11**,21,26;Nov.*10*†	3	13
1393	24	Sept. 15–23.	9	11	5	16	4	Aug. *21****	Sept. 22.25,*30**; Oct.*3***,4,5,*10***,21,*24****	1	7
902	36	Sept. 28–Oct.9.	12	4	1	18	2	Sept. *13**, *27**	Oct. 7, 13, 17, *19**, *21****, *28***	2	10
1324	36	Oct. 12–23.	12	19	4	24	4	Aug. 18; Sept. *8**, *28**; Oct. *11***	Oct. 26, *30**; Nov. *3****	1	7
1423	36	,, ,,	12	23	3	27	4	Aug. 22; Sept. *14****; Oct. 11.	Oct. *25**, *30***; Nov. *1***	0	2
1444	36	Sept. 28–Oct. 9.	12	14	3	35	4	Aug. *23**; Sept. *27***	Oct. 7, *18**, *17**, *19**, *28**	0	4
1553	36	,, ,,	12	11	2	31	4	Aug. 26; Sept. *7***, *28**	Oct. 7, *17**, *18**, *21****, *25**	0	8
1614	36	Oct. 12–23.	12	9	2	11	2	Oct. *10***	Oct. 24; Nov. *2**, *13****, *14**	1	10
1684	36	,, ,,	12	7	2	46	5	Sept. *1*†† ; Oct. 5; Oct. *11*†*	Oct. 25, *30****; Nov. 1, *6****	1	7
1688	36	Sept. 28–Oct. 9.	12	8	3	25	3	Sept. *2**, *28***	Oct. 5, *14**, 18, *20***	0	5
1690	36	,, ,,	12	2	2	21	2	Sept. *2***, *28***	Oct. 6, 8, *14***, *18**, *26***	0	5
1763	36	Oct. 12–23.	12	8	2	11	1	Sept. *14*††.; Oct. *11**	Oct. 25, *30**; Nov. *1**, *6***	1	7
1765	36	,, ,,	12	15	3	26	3	Sept. *14****, *23** ; Oct. 11.	Oct. 25, 30; Nov. *1***, *6**, 8, 9. *13**, *14**	2	9
1847	36	,, ,,	12	21	3	12	2	Sept. *29** ; Oct. 11.	Oct. 25, 30; Nov. *1****, *6***	2	9
1881	36	,, ,,	12	8	4	15	2	Oct. *3****, 10.	Oct. *24**, *27**, *31****	0	1
2089	36	Oct. 27–Nov. 7.	12	7	1	37	4	Oct. *17****	Nov. *13****, *15****	0	6
2122	36	,, ,,	12	12	3	23	4	Oct. *18**	Nov. *14**, 15, *21****	0	7
787	63	Sept. 15–Oct. 9.	22	5	1	60	5	Sept. *12*††	Sept. *21*†††, *23*††, *27*††, *29*††* ; Oct. *4*†††, *8*††, *16*††	0	7
10	72	Sept. 29–Oct. 23.	24	18	2	53	8	Sept. *28*††, *29*†††, *30*††† ; Oct. *1*†	Oct. 2, 3, 4, 5, 6, 7, 8, *9*††, *10*††. 12, 13, 14, 16, 18, 19, *20*†, 21, 22, *24*†, 25, 26, 27; Nov. 8, *11*†, 12, *14*†, *15*†, 17.	0	1

subsequent to the eighth day after treatment, and in only 9 cases was the last test previous to the thirteenth day after treatment. On the other hand, the two cases that relapsed are among the three that seem to have cleared up permanently after the second course of treatment (*v. supra* 6 (*a*) last para.), and it seems possible that on the first occasion they did not get sufficient of the drug.

It appears, therefore, that while there are undoubtedly cases which clear up under a smaller amount of the drug,[6] it is preferable to give the full course of 36 grains as a general rule. But if the ill-effects of the treatment on a man's general health are very marked, it would seem quite justifiable to give a somewhat shorter course, inasmuch as it seems likely that the first eight or nine doses of the drug may cure the great majority of those cases which it can cure at all.

8. *Length of Time during which it is Advisable to Keep Patients under Observation after Treatment.*

If all cases could be cured by the drug, as early work seemed to indicate, no examinations after treatment would, of course, be necessary. Our observations, however, seem to show that we may expect 20 to 25 per cent. of failures; and although this is a much better result than that obtained with emetine hydrochloride, yet it indicates that the success of the treatment should be checked by adequate protozoological supervision, if the end aimed at is the elimination of the convalescent carrier, in which case it is important that relapses should be detected.

The results detailed above seem to show that in the majority of cases that are going to relapse cysts will be found in the fæces within a very few days of the end of treatment, and somewhat earlier, apparently, on an average than in cases that relapse after treatment with emetine hydrochloride. One case, however, was not detected until the thirteenth day after completing his course, and if examinations are only made at intervals of a few days, some such cases are bound to escape earlier detection.

Again, it is evident that negative examinations made during or immediately after treatment are of very little value. Leaving out No. 10, which case was examined daily, 9 out of the remaining 18 cases were negative upon their first examination after treatment. In all, they were examined 77 times after treatment, and 30 of these examinations (nearly 40 per cent.) were negative, while 6 cases had two or more negative examinations.

From these considerations, therefore, it would appear advisable that cases which have been treated with emetine bismuth iodide should be kept under observation for not less than a fortnight after the completion of treatment, during which time as many tests as possible (certainly not less than four) should be made.

9. *Effects of Treatment on other Protozoa.*

Fifty-six of the carriers treated were found to be infected with *Entamœba coli*, in 13 of whom it was found once only. In 11 cases it was found only before, and in 11 others only after, treatment. It appears to be at least temporarily affected by the drug, disappearing during treatment, but generally reappearing sooner or later. There is, moreover, a remarkable similarity in the usual time of its reappearance to that of *E. histolytica* in the cases that relapsed. Thus, omitting the 11 cases in which it had not been found before treatment, it reappeared in 19 cases on the first, 12 on the second, and 3 on the third examination after treatment. The average number of days between the last dose and its reappearance was 6·05 (compared with 6·5 for *E. histolytica*), and the longest period between the last dose and the last negative test before its reappearance was eight days, as in the case of *E. histolytica*, except in one case, where it was 11. Thus in general its behaviour is strikingly similar to that of *E. histolytica* in those cases that relapsed.

On the other hand, the flagellate parasites of the small intestine appeared to be unaffected by the drug. *Giardia* (*Lamblia*) was found in 29 of the 102 cases, usually in the encysted form; it was present in the fæces on 10 occasions during treatment.

Chilomastix occurred in 12 cases; the unencysted form was less uncommon than that of *Giardia*, being present on seven occasions, four of them during treatment.

Trichomonas was found in 2 cases only, on the same date during treatment.

Conclusions.

1. Emetine bismuth iodide is much more effective than emetine hydrochloride in the treatment of carriers of *Entamœba histolytica*, but about 20 to 25 per cent. of failures may occur.

2. The intensely irritating properties of the drug in many cases are a drawback in its general application.‡

3. The definite failure to cure 19 out of the 102 cases treated at Barton may perhaps be in part due to the form of the drug employed (a keratin-coated tabloid).

4. It is improbable that there were many relapses later than those discovered; and as several of the cases had only eight or nine doses instead of 12, it seems likely that less than 36 grains may be effective.

5. It is advisable to keep cases under observation for not less than 14 days after treatment, and to examine them not less than four times during that period if relapses are to be detected.

6. The drug is without appreciable effect upon the intestinal flagellates, but has an effect, usually temporary, on *Entamœba coli*.

Acknowledgments.—For information relating to cases which were afterwards treated and studied at Mont Dore

‡ Since the above was written a new preparation of the drug in the form of salol-coated pills has been introduced by Dr. H. H. Dale; we are informed that this preparation of the drug is much less irritating than that used at Barton.

Military Hospital, Bournemouth, we are indebted to Captain S. Shepherd, R.A.M.C., and Mr. D. G. Lillie; for information regarding Case 10 to Dr. G. C. Low; Captain Cambell, R.A.M.C., of Hilsea Military Hospital, kindly enabled us to continue our observations on Case 1974.

References.—1. Cf. also Dobell, "Amœbic Dysentery and the Protozoological Investigation of Cases and Carriers," Medical Research Committee, Special Report Series, No. 4, I., January, 1917. 2. See Dale, "Treatment of Carriers of Amœbic Dysentery," &c., THE LANCET, July 29th, 1916; Low and Dobell, "Three Cases of *Entamœba histolytica* Infection Treated with Emetine Bismuth Iodide," THE LANCET, August 19th, 1916; Dobell, "Incidence and Treatment of *Entamœba histolytica* Infection at Walton," Brit. Med. Jour., Nov. 4th, 1916. 3. Dobell, January, 1917, loc. cit., pp. 80, 81. 4. Ibid., p. 76. 5. See Dobell, November, 1916, loc. cit., remarks on fourth series, and January, 1917, loc. cit., p. 81. 6. Cf. Low and Dobell, loc. cit., Case iii.

POST-DYSENTERIC DIARRHŒA AND ITS TREATMENT.

(An Excerpt from Notes on 2000 Cases at the Military Dysentery Convalescent Hospital at Barton-on-Sea.)

BY W. WADDELL.

This is the commonest sequela of an attack of acute dysentery and it follows both the amœbic and bacillary form of the disease with little distinction between. The post-amœbic diarrhœa is certainly more persistent, and is more prone to relapses. The post-bacillary is more easily controlled and does not relapse anything like as often as the former.

Ordinary astringents may abate the diarrhœa in both cases, and in some cases no doubt stop it, but in most it returns as soon as the astringent medicine is left off, and the case may go on like this for months. The unsatisfactory results from the use of astringents led me to inspect regularly the dejecta, and much information was obtainable as to why astringents fail so frequently.

The motions varied from very pale and almost jaundice-like colour to dark brownish green; they were full of undigested food particles; and were all more or less putrid and highly offensive. The patients passing these motions, which vary in number from two to eight or ten daily, are naturally more or less debilitated and down in weight. The appetite is poor, sclerotics yellow, dull and injected, complexion usually pale, patients languid and dull.

All the symptoms, objective and subjective, indicate a derangement of the liver functions—particularly a dyscrasia of the bile, a reduced output, or both. A chemically deranged bile must needs result in a non-digestion of the bowel contents, and if also the bile flow is diminished, the antiseptic qualities being also inhibited, putrefaction of the bowel contents is directly encouraged. No worse condition could exist where intestinal catarrh is present than that the contents of the already irritated intestines should be in such irritating and septic conditions, as already has been pointed out. Astringents, therefore, often fail entirely, or only partially succeed in bottling up the poisonous bowel contents, and perhaps it is often fortunate they do fail.

Castor oil will give great relief to these cases, but only temporarily, so also will mag. sulph., but neither will bring about a large flow of clean healthy bile, the thing so much required. This, however, can be easily done by full doses of tincture of rhubarb, B.P.

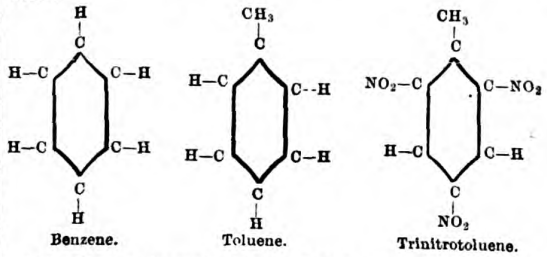
My routine is to give every such case not less than from 4 drachms or even 6 drachms at one dose. Forty-eight hours having been allowed to work it off, the motions are again inspected. If their colour and composition is still unsatisfactory, a second or even a third similar dose is given. When their colour assumes a healthy brown or yellow tone, it indicates that the whole bowel is now freely flushed with clean healthy bile and its putrid contents got rid of. In many cases the diarrhœa now stops of its own accord, but if it still continues a few doses of some binding medicine will be now safe and successful. Usually I give 30 grains bismuth subnitrate with 10 drops of dilute hydrochloric acid and 10 of tinct. opii, two or three doses daily. The diet should be soft and bland so far as possible, and a tonic containing pepsine should follow cessation of the diarrhœa.

Calomel is too severe and causes a lot of colic; so does podophyllin. Euonymin is uncertain. Small doses of tinct. rhei are quite useless; the dose must be large and its action full and speedy. In carrier cases tinct. rhei is useless. It apparently has no effect on *E. histolytica*, whatever it may do to other entamœbæ such as *E. coli* or *Lamblia*, &c. The emetine bismuth iodide is, I believe, the antidote to the *E. histolytica*. This drug I have given in 200 cases with considerable success. Better results will yet be obtained when the drug is improved and rendered less an emetic and purgative, as, being frequently and quickly cast out of the body, there is not time for its full effects to be developed.

THE EFFECT OF TRINITROTOLUENE UPON THE BLOOD.

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THE present manufacture of previously little used chemical substances upon an enormous scale happens to have thrown some light upon the obscure problem of the causation of blood diseases. We are, if we except chlorosis, as ignorant of the etiology of the so-called primary blood diseases as of their cure, and the proof that the absorption of a definite chemical compound can reproduce exactly a well-recognised blood state is worthy of consideration. Trinitrotoluene, or as it is commonly called T.N.T., is a benzene derivative, thus:—



The effect of benzol upon the blood has been recognised for several years, and the following papers upon this and allied substances may be briefly considered before describing the blood changes among workers in T.N.T.

Previous Observations.

The condition of the blood in men engaged in the manufacture of dinitrobenzol was investigated by Dr. Walter Malden[1] in 1907. The changes in the blood described by Dr. Malden are briefly as follows:—

The red cells are considerably reduced in numbers, they vary in size and shape, and very constantly show marked basophil granulation. Nucleated red cells are occasionally present. The hæmoglobin is proportionately decreased, the colour index being normal. The total white cells are increased, but with a considerable relative decrease in the polymorphonuclear cells. The eosinophil cells sometimes, and the mast cells more often, are relatively and absolutely increased. Dr. Malden's results are based upon the examination of 21 men employed and still at work. No cases of severe illness are apparently referred to in his paper. No animal experiments with D.N.B. are mentioned.

Dr. Selling[2] investigated the action of benzol upon the hæmatopoietic organs of guinea-pigs, and succeeded in producing in these animals a condition of aplastic anæmia. Dr. Selling was led to perform these experiments by the occurrence of three cases of benzol poisoning admitted to the Johns Hopkins Hospital. These cases, two of which terminated fatally, were employed in a tin-box factory for 4–5 months. On admission to the hospital they were suffering from high fever, purpura, and anæmia of the aplastic type. A description of the cases is to be found in the Bulletin of the Johns Hopkins Hospital.[3]

Klemperer and Hirschfeld.[4] These authors repeated Selling's experiments and found in their animals microscopic evidence of more or less severe marrow destruction, also, and in every case, severe and extensive necrosis of the liver and kidneys. They quote Pappenheim as having found similar necrosis in the liver and kidneys of guinea-pigs after 1–2 weeks' administration of 2–3 grammes of benzol. They further refer to experiments in which erythræmia was produced by administration of benzol in small doses.

Kiralyfi[5] describes a fatal case of leukæmia treated with benzol. The white cells became reduced from 73,000 per c.mm. to 460 per c.mm. when the patient died. No post-mortem account is given.

Neumann[6] describes another case of leukæmia treated with benzol in which the leucocytes fell from 56,000 to 5300 in 36 days when the treatment ceased. The leucocytes, however, continued to fall until they reached 200 per c.mm. when the patient died. Post mortem they found marrow changes similar to those produced by Selling in guinea-pigs, but the condition of the liver is not mentioned.

1 Journal of Hygiene, vol. vii., No. 5, October, 1907.
2 Ziegler's Beiträge, 1911, Bd. li.
3 Johns Hopkins Hospital Bulletin, vol. xxi., 1910.
4 Therapie der Gegenwart, 1913, p. 57.
5 Wien. Med. Woch., 1913, xxvi., p. 1062.
6 Therapie der Gegenwart, 1913, p. 56.

Mühlmann[7] describes a fatal case of lymphatic leukæmia treated with benzol. In the liver he found extensive necrosis of the central portions of the acini, as well as diffuse leukæmic infiltration. He refers to the necroses found by Pappenheim in the liver of guinea-pigs after benzol. The necroses in these animals were in the periphery of the lobules and not in the central portions.

Heffter[8] describes the case of a man poisoned by inhalation of benzol fumes. The man died within a few hours of inhaling the fumes. Heffter describes the post-mortem appearances and gives seven other references to cases of acute benzol poisoning. Benzol cannot be discovered in the body after death.

Stadelmann[9] investigated the effects of toluylenediamine on animals. Toluylenediamine has the formula $C_6H_3(NH_2)_2CH_3$. The drug gave different results with different animals. Dogs always got severe jaundice. Cats got hæmoglobinuria and usually slight jaundice. Guinea-pigs got marked anæmia and not true jaundice. No blood counts are given.

Willcox[10] describes cases of aeroplane "dope" poisoning. Willcox, by experiments on white rats, proved the constituent of the dope which causes jaundice to be tetrachlorethane. In this description of the human jaundiced cases he makes no mention of the blood condition. The association of tetrachlorethane with dope poisoning had been previously proved and published by Heffter and Joachimoglu.[11]

Investigation of those Actually at Work.

In considering the effect of T.N.T. upon the blood it was thought worth while to examine first by the ordinary methods of blood-counting and microscopy the blood of a series of people actually at work upon the substance. Fifty cases were thus examined and the results tabulated. The tables are not given here, but are included in a report to the T.N.T. Advisory Committee. The 50 cases were all women and all at work at the time of the examination. The cases were taken more or less at haphazard, but a few women who were noticed in the works to look pallid were purposely examined, and those who had been the longest employed were especially asked for. A large percentage had slight blueness of the lips and a few were markedly cyanosed. The girls, as a whole, looked fit and well. Some were of pallid complexion, but this is no guide to the blood condition. The time employed in the factory varied from one year and three months to a few days. It may be said at once that there is no evidence that the daily absorption of T.N.T. by these women had any deleterious effect upon the blood.

The red cells, hæmoglobin, and colour index are not adversely affected. I judged the average number of red cells in women of this class to be between 5 and 6 million to the c.mm., and nearer the latter than the former number; and the average hæmoglobin percentage to be about 90 per cent. or possibly a little under.

A subsequent routine examination of a number of girls employed in the manipulation of another substance leads me to think that the normal standard is probably lower than that given, and suggests that the average worker in T.N.T. may receive actual benefit to the number of red cells and the percentage of hæmoglobin.

I thought at first that the lowest readings occurred among the latest comers to the works, but this is not borne out by the figures.

The average number of red cells among those employed more than three months (24 cases) is 5,200,000 per c.mm., the average hæmoglobin percentage is 88·7. The average red cells among those employed less than three months (26 cases) is 5,700,000 and the average hæmoglobin 90 per cent.

If those employed one month or less are taken and the case of an abnormal plethoric girl employed only a few days is omitted, 9 cases are left with average red cells 5,500,000 and average hæmoglobin 86·1 per cent.

These numbers are sufficiently close to justify the statement that no appreciable change in the number of red cells nor in the percentage of hæmoglobin could be traced to a duration of employment greater than one month.

The morphological characters of the red cells throughout were normal. Not a single nucleated red cell nor a single cell showing granular degeneration was observed in 50 stained preparations. A very slight degree of poikilocytosis was seen in a few films. Three of the more anæmic cases were re-examined two weeks later and were found to be slightly less anæmic. Slight degrees of anæmia are necessarily found in examinations of girls of this age and condition. So far as the red cells and hæmoglobin are concerned no such changes are found as were noted by Malden among the D.N.B. workers. Yet the women at this factory were daily absorbing doses of T.N.T., since, at the time of this examination, Professor Benjamin Moore had proved the elimination of a T.N.T. compound in the urine of all workers examined. There is no alternation of labour in this factory.

The white cells of the blood in a very large percentage of cases were well above the normal number, and that this increase resulted from the employment is suggested by the high figures found among those longest employed. In 40 cases at work more than one month the average number of leucocytes was 10,000 per c.mm. In 9 cases employed one month or less the average number was 7500. I should judge the normal number to be from 4000 to 6000. The relative proportions of the white cells were not greatly altered, but many cases with high counts showed a distinct relative increase in the polynuclear neutrophils. The eosinophil cells were in a large number of cases above the normal. Very few abnormal white cells were seen in any preparation. In view of the blood changes found in the cases of severe anæmia to be described, it seems probable that this leucocytosis, usually of the inflammatory type, is due to a stimulation of the hæmatopoietic system by the poison.

In addition, 100 women, chosen at random from those at work in the same factory, were investigated as to cyanosis and cholæmia.

A.—*The incidence of cyanosis.*—It is unfortunate that on the days on which this examination was made the weather was very cold and bitter, so that it was often impossible to decide between the blue lips of toxic cyanosis and those due to atmospheric conditions.

All the cases examined were seen immediately after the conclusion of their shift, and of the 100 cases 78 were noticed to be cyanosed; of the 78, 18 were markedly cyanosed.

A percentage of 78 probably exaggerates the incidence of cyanosis owing to the atmospheric conditions before mentioned. The most marked case of all, on further examination, turned out to be in all probability the subject of congenital morbus cordis. Another case had suffered from rheumatic fever. But if every allowance is made it is evident that some degree of cyanosis is very common among employees.

The cause of the cyanosis has been taken to be the presence of methæmoglobin in the blood. It is probably a mixture of methæmoglobin and NO hæmoglobin. The amount of the substance in the blood is insufficient to give a spectrum with the ordinary small spectroscope, and proof of its presence rests upon the use of a test devised by Haldane. This test is extremely simple to perform, but in my experience in these cases almost impossible to interpret.

In this investigation an accurate dilution of the blood was made in each instance—namely, 10 c.mm. of blood in 1 c.c. of water. Normal bloods were taken as controls. In each sample the oxyhæmoglobin was converted into CO hæmoglobin by the passage of coal gas. Blood containing a trace of methæmoglobin appears of a muddy colour when contrasted in daylight with the bright pink of pure CO hæmoglobin. The amount of the abnormal substance in the blood of these women is so small that in scarcely a single instance was a really obvious result obtained, nor did the results of the test correspond with the clinical degree of cyanosis. Thirty-six were noted as giving a positive result, but in only two of these was the reading at all definite. An obvious difficulty in reading these minute differences of colour is caused by the different values of hæmoglobin in the various samples. I have since been informed that clearer results are obtained by the use of pure CO in preference to coal gas.

Both toluol and amatol powders give off in small quantities at room temperature gases smelling strongly of nitrous oxide. It is true that T.N.T. sublimes as such, but the sublimate is white, the crude powder is yellow, and presumably over nitrated, since if T.N.T. is washed in water the powder becomes white and the water yellow. No such smell is given off by the sample of D.N.B. in my possession. Further, ammonium nitrate, a constituent of amatol, if warmed gives off laughing gas, but if heated NO in addition.

In the following experiment two guinea-pigs were killed, one by exposure to amyl nitrite vapour, the other by NO. The blood of both animals gave Haldane's test, and the animal killed by NO vapour gave a stronger test in dilute solution of its blood than the other animal. The possibility of NO hæmoglobin or the usual mixture of NO and methæmoglobin being produced in the blood of workers by the

[7] Deutsch. Med. Woch., xxxix., p. 2083. [8] Ibid., p. 182, 1915.
[9] Der Icterus, Stuttgart, 1891. [10] THE LANCET, 1915, vol. i., p. 544.
[11] Vierteljahrschr. f. gerichtl. Med. u. öffentl. Sanitätswesen, 1914, xlviii. supp., p. 32.

inhalation of nitrous fumes has to be considered, but the percentage of such fumes in the atmosphere at any time must be extremely small.

B.—*The incidence of cholæmia.*—It was thought that the percentage of workers with bile pigment in the serum might be a guide to the incidence of liver changes without actual jaundice.

A sample of blood was taken from each of the hundred workers into a serum tube and allowed to stand until the next day, when the colour of the serum was examined by daylight. In 20 of the cases the serum was bile-tinged. This would appear to show that in a high proportion of those at work some action of the poison upon the liver was taking place. Allowance must, however, be made for the fact that among ordinary members of the community a small percentage of bile-stained sera are found, particularly among those subject to constipation. All of these employees were women, but even so a percentage of 20 bile-stained sera would seem unduly high. No case was noticed to be jaundiced, and only three sera were at all deeply bile-tinged. Even a percentage of three cases of toxic cholæmia would lend support to the supposition that T.N.T. workers may be receiving damage to the liver without attacks of sickness or toxic jaundice.

The 20 per cent. of cases with bile-tinged sera is, however, sufficient practical objection to placing workers on the sick list on this account alone.

Normal persons may have bile-tinged sera, but in my experience the appearance of bile in normal sera is periodic. The serum of a worker which remained obviously bile-tinged over a period of 10 days and in spite of purgation would be very suggestive of poisoning.

The conclusions, then, to be drawn from an investigation of those actually at work and in contact with T.N.T. are as follows.

1. That no adverse effect is produced on the red cells and hæmoglobin; but, on the contrary, it is suggested that some stimulation of the erythroblastic tissues is induced.

2. That there is an appreciable increase in the leucocytes, an increase which, in view of the changes which may occur in T.N.T. poisoning, may be ascribed to a noticeable stimulation of the leucoblastic tissues by the drug.

3. That cyanosis is common among T.N.T. workers, and that the cause of the cyanosis is possibly the production of NO hæmoglobin, possibly methæmoglobin, probably a mixture of both compounds.

4. That bile pigment is present in the blood in such a proportion of cases as to make it possible that liver damage is taking place in the absence of symptoms, but owing to the occurrence of bile-tinged sera in otherwise normal individuals such damage cannot be taken as proved, and the test cannot be accepted as ground for removing a workman from his employment.

Investigation of Cases of Sickness.

In the next place, cases of sickness arising among T.N.T. workers were investigated. These cases include a few examples of minor illnesses, a number of severe anæmia cases without jaundice, and a considerable number of toxic jaundice cases. These anæmic and jaundiced cases were examined where possible over intervals of time. Cases of anæmia were seen without jaundice, and of jaundice without anæmia. Some jaundiced cases subsequently developed anæmia, and in view of the extreme gravity of the form of anæmia set up the relationship of the anæmia to the jaundice was particularly investigated.

In addition to the ordinary blood examinations, certain other tests were performed in some instances. Bile was looked for in the serum; the fragility of the red cells was estimated and, following certain observations communicated to me by Dr. F. H. Jacob, of Nottingham, the Wassermann test was performed in a few cases.

In all 34 cases of sickness arising among T.N.T. workers were investigated. Of these 34 cases, 4 were examples of somewhat severe gastric disturbance without jaundice or anæmia, 6 were suffering from the peculiar form of anæmia to be described, and 28 had toxic jaundice. Four of the anæmic cases were jaundiced also. The main points in the routine blood examinations of all these cases are shown in the table.

Gastritis cases.—Of these four cases, No. 18, a young girl of 18 years, showed a notable degree of anæmia, but the blood changes were not those of the aplastic type. After five days' absence from work she was still cyanosed, and her blood gave a strongly positive Haldane test. The fragility of her red cells was normal. Case 19 had had several attacks of gastritis, and had never been jaundiced. The blood condition was normal. Cases 23 and 24 were both men who had been sent to hospital as instances of early toxic jaundice. Both had gastric symptoms and deposits of conjunctival fat; neither was jaundiced. The blood condition was normal in both cases, and the serum quite free from bile.

Toxic jaundice and anæmia.—While considering these two conditions under the same heading, I believe them to be distinct and separate pathological states not necessarily dependent the one upon the other.

It has been suggested that the T.N.T. poison produces first a methæmoglobinæmia, then hæmolysis, and finally anæmia. The suggestion does not appeal to me in theory, and such evidence as I have been able to collect is opposed to it. It appears that while the jaundice follows destruction of the liver tissue, the anæmia follows destruction not of the blood but of the red marrow. What may be the exact substances which produce these changes, and whether these substances are in the two cases identical are matters of speculation; what is certain is that jaundice occurs without blood changes, and, more important, blood changes occur without either jaundice or liver destruction.

The percentage of jaundiced cases developing anæmia.—In an interesting article in THE LANCET of Jan. 27th, 1917, Captain M. J. Stewart gives a résumé of a paper read by him at the Royal Society of Medicine. Of 14 cases of toxic jaundice he considered 13 to show definite blood changes, but of these 13 only 3 showed any marked anæmia, which he describes as of the "pernicious" anæmia type.

The blood changes referred to by Captain Stewart include a leucocytosis, a leucopenia with a relative lymphocytosis and an eosinophilia. The leucocytosis and the eosinophilia I have shown to be present very constantly in T.N.T. workers, and it is probably due to stimulation of the red marrow. A leucopenia with a relative lymphocytosis is an accompaniment of aplastic anæmia, but has little significance in the absence of red cell changes. The number of leucocytes and the percentage of lymphocytes are subject to wide variations in health. The total number is very commonly lower, and the percentage of lymphocytes usually higher in normal persons than is indicated in the majority of text-books. This is so far unfortunate in that a leucopenia with a relative lymphocytosis has been described by many observers as typical of this or that pathological state. Of Captain Stewart's 14 cases, only three show severe blood changes, and these, with the possible exception of one case, I should prefer to describe as of the "aplastic" rather than of the "pernicious" anæmia type.

Of the 28 examples of toxic jaundice considered here, only four have shown blood changes of importance, and the changes in these four cases have been those of aplastic anæmia. It is possible that some of these cases may develop anæmia, but it is unlikely. So far as possible all cases seen in the acute jaundiced condition have been re-examined about three months later. Other cases were seen for the first time in the convalescent stage 6–9 months after jaundice first appeared. Aplastic anæmia is not a transitory condition, it may be fatal in about seven weeks (see Case 2), or it may drag on for months (see Case 1 and Case 5). I have not yet seen a case of complete recovery.

If Captain Stewart's cases are added to those in the table we have 42 cases of toxic jaundice, of which 7 developed severe anæmia, or a percentage of 16·6. Such a percentage is sufficient to indicate that T.N.T. workers who develop toxic jaundice run a definite risk of acquiring aplastic anæmia also.

The nature of the jaundice.—The incidence, the mortality, and the prognosis of toxic jaundice is beyond the scope of this examination. Certain points, however, may be noted because they tend to vitiate the official statistics.

A number of cases notified as toxic jaundice are not jaundiced at all. A few such cases have been met with in this investigation. In all cases of doubt the serum should be examined. A patient with a clear serum has not got toxic jaundice. A patient with a bile-tinged serum may have.

All cases of catarrhal jaundice occurring in T.N.T. workers are unavoidably notified as instances of toxic jaundice. Some mild examples of jaundice in the table are in all probability cases of simple catarrhal jaundice. Other rarer forms of jaundice will also help to swell the figures. Case 3 is probably an example of familial hæmolytic icterus with possibly toxic jaundice in addition.

The nature of the jaundice is properly described as a toxic jaundice, and the toxic substance acts upon the liver cells. It is not a hæmolytic jaundice, since, in the majority of cases, there is no evidence of blood destruction. In those cases met with here in which anæmia supervenes the blood changes commenced as the icterus passed off (see Cases 4, 5, and 6).

In the rare condition known as hæmolytic icterus the *fragility* of the red cells is greatly increased, in other forms of jaundice it is slightly diminished. In one convalescent case examined here the fragility was normal; in three jaundiced cases the fragility was diminished.

The relationship of the Wassermann reaction to toxic jaundice is a point of some interest. If all, or a high percentage of, toxic-jaundiced patients gave a positive Wassermann reaction it might be argued that the reaction resulted from the effect of the poison and not from syphilis. Dr. Jacob informed me that he found a positive Wassermann reaction in three consecutive cases of severe jaundice. I examined one severe case and seven convalescent cases, the majority of whom still had bile-tinged sera and had been very severely jaundiced. The reaction was negative in all cases. It is suggested that a positive Wassermann reaction in toxic jaundice is proof of syphilitic infection, and though the jaundice in such cases may be toxic and not syphilitic it is probable that a syphilitic person is more susceptible to the action of the poison than a normal individual, a detail with some bearing upon the question of compensation.

The latency of the jaundice is well shown in Case 16, a woman who left work owing to an injury and five weeks later developed jaundice. The long period which may elapse between exposure to the poison and development of symptoms is well known and very remarkable. It is referred to again in considering the anæmic cases.

The duration and after-effects of toxic jaundice.—An examination of a series of cases of toxic jaundice leaves one with the impression that the illness is long and serious and that a complete recovery is possibly more rare than is supposed.

The actual mortality I am not in a position to state; it is probably considerably higher than appears in the official notifications owing to the number of cases returned, often unavoidably, which are not instances of toxic jaundice, and a further percentage returned as recovered, who may still succumb to the after-effects of the poison.

Some of the cases in the table were seen as long as nine months after the appearance of the jaundice and still showed bile in the serum. Case 5 became jaundiced in April, 1916, recovered, and returned to work, but not in T.N.T. He died of aplastic anæmia on Feb. 16th, 1917. His liver was scarred and puckered as the result of his old jaundice.

I have scarcely seen a single convalescent case who admits feeling as well as formerly. The majority display a noticeable lassitude and loss of energy.

The persistence of bile in the serum is remarkable. Of these 28 cases the serum was free at the time of the last examination in seven only. Of these seven, four were only slight cases, and possibly instances of catarrhal jaundice. Of the remaining three cases two were severe and the serum was clear eight months and nine months respectively after the onset.

It is probable that all severe cases are left with damaged livers, but it cannot yet be stated whether the change is progressive or not.

The nature of the anæmia.—The six cases of anæmia met with in T.N.T. workers appear at the beginning of the table. The full development of the condition is best shown in Case 4.

The type of anæmia produced is that known as aplastic anæmia. This condition is met with in ordinary civil practice, but it is extremely rare. It is far less frequently seen than the unusual blood state—pernicious anæmia. Aplastic anæmia has been occasionally noted to develop as the result of a definite poison such as benzol, but cases are from time to time met with in whom no clue to the causation of the disease can be detected. Two such cases were recently in-patients of the London Hospital, but instances of pernicious anæmia at this hospital must be more than ten times as numerous. I have not met with an example of pernicious anæmia among T.N.T. workers.

Aplastic anæmia can be differentiated from pernicious anæmia during life by an examination of the blood, and after death by the changes found in the organs.

Pernicious anæmia appears to be a disease characterised by abnormal blood destruction imperfectly compensated for by abnormal marrow activity. Aplastic anæmia appears to be produced by red marrow destruction.

The changes found in the blood in aplastic anæmia are as follows:—The red cells become steadily reduced in numbers, but retain the normal or more than the normal percentage of hæmoglobin. Consequently, in spite of the fall in the percentage of hæmoglobin which accompanies the diminution of red cells the colour index is high, as in pernicious anæmia.

The diminution in the number of red cells takes place without change in their morphology. Poikilocytosis, polychromatophilia, and granular degeneration with the appearance of normoblasts and megaloblasts, all characteristic of pernicious anæmia, are almost entirely absent in this condition. A few such abnormal cells may appear at the time of death, but during the course of the disease they are absent. Some alteration in the relative sizes of the red corpuscles is usual, but in every other respect the appearance of these cells in a stained film is normal.

The total number of leucocytes shows an equally characteristic diminution, and this diminution takes place almost entirely at the expense of the granular or essentially marrow cells. The polynuclear neutrophil leucocytes in one of these cases were reduced to 4 per cent. of a total leucocyte count of 1000 per c.mm. These scanty survivors of the marrow cells were noticeably degenerate in appearance, and their granulation was more sparse than appears in normal cells. The lymphocytes, on the other hand, were perfectly normal in their appearance and were not greatly reduced in total numbers. Since the characteristic feature, post mortem, is the disappearance of the red marrow, the blood picture during life yields information as to the sites of origin of the granular and non-granular cells respectively. This atrophy of the leucoblastic marrow may be considered in connexion with the leucocytosis found to be prevalent among T.N.T. workers. It is suggestive that the poison stimulates marrow activity, and that in exceptional circumstances the stimulation is succeeded by destruction.

The latency of the anæmia.—If the period which may elapse between absorption of the poison and development of icterus is remarkable, the latency of the anæmia is more remarkable still; it is also in jaundiced cases developing anæmia more possible to observe. In Case 4 the anæmic state did not become noticeable until about six weeks after the appearance of jaundice. In Case 5 the anæmia developed nine months after employment in T.N.T., but in this case it is probable that some changes were present at an earlier date, and in the interval the man had returned to work in a T.N.T. factory, though he was not actually handling T.N.T. In Case 6 the anæmia developed four months after leaving work, and while still in hospital, as the result of toxic jaundice.

The explanation of this latency cannot yet be given. It has been suggested that the poison is ingested, stored in the tissues, and subsequently liberated. Yet it has not been possible to detect T.N.T. or T.N.T. derivatives in any of the organs of fatal cases, and in view of the extreme length of the latent period such an explanation seems to me improbable.

The course of the anæmia.—Of the six cases described here two are dead. One died about seven weeks after the anæmia was recognised, the other about five weeks after. A mortality of one in three does not, however, represent the gravity of the condition. I have never known a case of aplastic anæmia in civil practice to recover, and none of these cases are yet out of danger. The six cases might be increased to seven by the addition of a similar example to Case 2, arising in the same factory, in whom the cause of death was proved post mortem. This would make seven cases with three deaths. Case 3 has a peculiar condition, and is possibly not aplastic anæmia. If this is omitted we have six cases with three deaths. Case 4[12] is extremely unlikely to recover. Case 6 has not yet completely developed. Case 1 is the only patient so far to show any sign of recovery, and his blood condition is definitely improving. Improvement, however, may occur even in aplastic anæmia, only to be followed by a fatal relapse.

The peculiar anæmia which may affect T.N.T. workers is therefore an extremely dangerous and fatal disease. It is not yet possible to say whether it is ever recovered from. Fortunately, it is a very rare condition, and the risk to any individual worker in T.N.T. of dying from this disease is almost negligible.

Drugs appear to have little or no effect upon the course of the disease. The most rational treatment would appear to be a course of transfusions of blood. To be of use numerous transfusions, each of 500–600 c.c. over a period of several weeks, would be indicated in order to give the red marrow a chance of recovery. It was unfortunately not possible to attempt this method of treatment in any of the patients seen by me. Residence of the patient in a large general hospital is, at the present time, essential if treatment by transfusion is to succeed.

Purpura has been mentioned as having been noted in cases of benzol poisoning. Two cases of purpura—both fatal—have been notified by Dr. Jacob among T.N.T. workers at Nottingham. The following patient, not included in the 32 cases of the table, was recently admitted to the London Hospital: J. E., a girl of 21, had been working on the manufacture of T.N.T. for seven months and until a fortnight previously, when the works were closed down. She was stated to have been on several occasions overcome by the fumes developed in the nitrating process. A girl who worked with her was said to have recently developed toxic jaundice. Ten days before admission she commenced to bleed from the vagina, and subsequently from the rectum and mouth. On admission she was extremely ill, was bleeding profusely, and had a purpuric rash over the limbs and trunk.

A blood examination showed—

Red cells 1,200,000 per c.mm.	Colour index ... 0·3
Hæmoglobin ... 8 per cent.	White cells ... 480 per c.mm.

[12] Case 4 has since died—April, 1917.

Of the white cells, 75 per cent. were lymphocytes and only 10 per cent. polynuclears. The stained blood picture was that of aplastic anæmia.

The coagulation time estimated by Wright's method was four minutes.

The patient died two days later, and post mortem no liver necrosis was present, the vertebral marrow was grey, and there was less than the normal amount of red marrow in humerus and femur.

In view of the blood condition, the post-mortem appearances, and the striking tendency of aplastic anæmia subjects to profuse bleeding, I think it probable that the purpura was an incident in the course of a case of aplastic anæmia, and that the profuse hæmorrhage hastened death and altered the colour-index to the chlorotic type.

Such a case, if nothing had been known of the patient's connexion with T.N.T., would have been classed as "hæmorrhagic purpura," of which, as of all purpuras, we

TABULAR STATEMENT OF RESULTS OF INVESTIGATION IN 34 CASES OF SICKNESS AMONG T.N.T. WORKERS.

No.	Name.	Male or female.	Date of examination.	Date of onset of jaundice.	Jaundiced now.	Bile pigment in serum.	Percentage of hæmoglobin.	Red cells.	White cells.	Colour index.	Polymorpho-nuclears.	Small lympho-cytes.	Large lympho-cytes.	Large hyalines.	Eosinophils.	Mast cells.	Other white cells.	Remarks.
1	J. B.	M	Oct. 1, 1916.	Never.	No.	—	25	1,410,000	5,200	0 9	22·0	74·0	...	4·0	...	...	...	(Dr. Jacob.)
	"		Dec. 7, "	"	"	—	40	2,225,000	16,000	0·9	51·5	11·5	14·5	22·0	...	...	My* 0·5	Anisocytosis.
	"		Mar. 1, 1917.	"	"	—	65	2,200,000	3,000	1·4	68·0	17·5	7·5	7·0	...	...	...	"
2	P. C.	M	Nov. 27, 1916.	"	"	—	35	1,637,000	1,400	1·1	20·0	50·5	26·5	3·0	...	...	...	Slight anisocytosis.
3	H. H.	F	Dec. 7, "	Nov. 12, 1916.	++	+++	75	4,180,000	13,400	0·9	49·0	28·5	15·0	5·5	2·0	...	...	Died Jan., 1917. Poikilocytosis ++
	"		Mar. 1, 1917.		+	++	70	3,030,000	9,200	1·1	57·5	33·5	5·5	3·5	...	...	...	
4	S. S.	F	Jan. 5, 1917.	Dec. 27, "	+++	+++	95	5,900,000	11,800	0·8	70·0	18·0	9·0	1·5	0·5	1·0	...	Red cells normal.
	"		Jan. 29, "		++	+++	90+	5,010,000	7,600	0·9	42·5	32·5	18·5	2·5	4·0	...	...	" "
	"		Feb. 5, "		++	+++	82	4,200,000	5,000	0·9	45·5	36 0	10·5	6·0	2·0	...	...	" "
	"		Feb. 19, "		+	++	88	3,500,000	4,600	1·2	26·0	48·0	22 0	...	3·0	1·0	...	" "
	"		Mar. 5, "		+	++	55	2,540,000	3,000	1·1	15·5	54·5	28·5	1·0	0 5	...	...	Anisocytosis.
	"		Mar. 19, "		+ faint	++	30+	1,470,000	1,000	1·1	4·0	70·0	21·0	5·0	...	...	...	
5	E. K.	M	Jan. 13, "	April 5, " Recovered and returned to work in August.	No. But facies of pernicious anæmia.	+ faint	30+	1,360,000	3,200	1·1	51·5	34 0	12·0	2·5	...	...	...	" "
6	R. R.	M	Dec. 7, 1916.	Nov. 5, 1916,	+	++	95	5,400,000	3,400	0·8	29·0	43 5	14·5	10·5	2·0	0·5	...	Red cells normal.
	"		Mar. 1, 1917.		?	+ faint.	65	2,840,000	3,000	1·1	34·0	42·0	14·0	4·0	6 0	...	...	Anisocytosis.
7	H. G.	M	Dec. 1, 1916.	Oct. 20, " (slight).	No.	—	95	5,600,000	9,200	0·8	61·0	7·5	25·0	5·0	1·5	...	...	Red cells normal.
8	G. R.	F	Dec. 1, "	Nov. 13, 1916.	++	+++	100	5,640,000	7,400	0·8	57·5	17·5	13·5	8·0	2·5	1·0	...	" "
9	E. G.	F	Dec. 1, "	Oct. 4, " (slight).	No.	—	90	6,800,000	10,200	0·7	45·0	15·0	26 0	8·5	5·5	...	...	" "
10	E. B.	F	Dec. 6, "	Nov., 1916.	+	++	90	5,400,000	6,800	0·8	48·5	21·0	21·0	8·0	1·5	...	...	" "
	"		Mar. 5, 1917.	Nov., "	—	—	90	4,320,000	6,400	1·0	66·0	16 0	13·5	2·5	2·0	...	...	" "
11	K. D.	F	Dec. 7, "	Nov. 11, "	+ slight.	+	105	6,200,000	12,200	0·8	71·0	8·5	10·0	6·0	3·5	1·0	...	" "
	"		Mar. 1, 1917.	Nov. 11, "	—	+ faint.	85	5,400,000	10,000	0·8	75 5	18·0	1·5	2·0	3·0	...	...	" "
12	W. B.	M	Dec. 7, 1916.	Sept. 21, "	+ slight.	+	95	6,100,000	5,800	0·8	38·0	11·5	3·7	8·0	5·5	...	...	" "
	"		Mar. 1, 1917.	Sept. 21, "	+ slight.	+ slight	100	6 000,000	3,200	0·8	53 0	27·0	13·0	6·0	1·0	...	...	" "
13	H. K.	M	Dec. 7, 1916.	Dec. 1, "	? slight.	+	95	6,040,000	13,600	0·8	83·0	6·0	5·0	4·0	1·5	0·5	...	" "
	"		Mar. 1, 1917.	Dec. 1, "	No.	+ faint.	110	6,700,000	22,800	0·8	Normal.				...	...	...	" "
14	E. G.	F	Dec. 7, 1916.	Nov. 3, "	No.	++	100	5,750,000	7,800	0·8	63·5	12·0	15 0	2·0	6·5	1·0	...	" "
15	E. P.	F	Dec. 11, "	Nov., "	+++	+++	95	5,100,000	6,000	0 9	50·5	14·0	25·0	6·0	3·5	1·0	...	" "
	"		Feb. 27, 1917	Nov., "	No.	+ faint.	85	4,890,000	3,600	0·8	43 5	15·5	32·5	7·5	1·0	...	...	" "
16	Mrs. C.	F	Jan. 6, "	Dec., " (5 weeks after ceasing work).	+++	+++	90	5,000,000	8,400	0·9	82·0	9·0	7·0	2·0	...	...	...	" "
17	D. J.	F	Jan. 8, "	Jan. 1, 1917.	+ slight.	+	85	4,970,000	7,000	0·85	43·0	27·0	24·0	6·0	...	...	...	" "
18	L. P.	F	Jan. 13, "	Never (gastric and cyanosis).	No.	—	70	2,600,000	9,800	1·3	80·0	9·0	4·5	3·5	2·5	1·0	...	" "
19	E. B.	F	Jan. 13, "	Never (gastric)	No.	—	95	5,750,000	8,200	0·8	75·0	7·5	8·5	7·5	1·5	...	...	" "
20	L. P.	F	Jan. 29, "	Jan. 20, 1917	+++	+++	100	4,750,000	6,800	1·0	77·0	10·0	4·0	7·0	1·0	1·0	...	" "
21	A. S.	F	Feb. 20, "	Feb. 13, "	+	++	85	4,860,000	8,600	0·9	44·0	17·5	29·0	7·5	2·0	...	...	" "
22	A. J. G.	M	Feb. 24, "	Oct., 1916 (severe)	No.	+ very slight	110	7,500,000	5,000	0·6	49·0	29·0	10·5	10·0	1·5	...	...	" "
23	R. F.	M	Mar. 1, "	Never (gastric only).	No.	—	95	5,800,000	5,400	0·9	22·0	38·0	26·0	5·0	8·0	1·0	...	" "
24	J. C.	M	Mar. 1, "	Never (gastric only).	No.	—	95	5,400,000	5,800	0·8	53·0	27·0	12·0	5·0	3·0	...	...	" "
25	E. G.	F	Mar. 14, "	June, 1916 (mild).	No.	—	100	5,675,000	10,800	0·8	57·5	26·5	10·5	4·0	1·5	...	...	" "
26	W.	F	Mar. 14, "	July, 1916 (very mild).	No.	—	100	6,000,000	17,000	0·8	73·0	15·5	6·5	2·5	2·5	...	...	" "
27	B.	M	Mar. 14, "	Oct., 1916 (very slight).	? slight.	+	100	5,675,000	20,000	0·8	71·0	8·5	9·5	9·5	1·5	...	...	" "
28	W.	M	Mar. 17, "	Aug. 17, 1916 (very severe).	No.	—	95+	5,110,000	7,200	0·8	42·5	18·5	24·0	5·5	8·5	1·0	...	" "
29	B.	F	Mar. 17, "	Sept. 14, 1916 (very severe).	No.	—	90	5,850,000	4,200	0·8	55·5	17 0	17·5	7 5	2·5	...	...	" "
30	V.	F	Mar. 17, "	Sept., 1916 (general, not severe).	No.	+ faint.	100	6,500,000	6,400	0 8	61·0	19·0	6·5	5·5	17·0	1·0	...	" "
31	M. S.	F	Mar. 17, "	Aug. 4, 1916 (severe).	No.	+ faint.	85	6,000,000	7,600	0·7	62·5	23·5	8·0	4·5	1·5	...	...	" "
32	Mrs. F.	F	Mar. 17, "	Aug., 1916 (eyes only, mild).	No.	+ faint.	90	5,110,000	5,200	0·8	59·0	24·0	12·0	3 0	1·5	0·5	...	" "
33	Mrs. P.	F	Mar. 17, "	July, 1916 (general, not severe).	?	+	90	4,770,000	4,400	0·9	65·5	9·0	19·0	4·5	2·0	...	...	" "
34	Mrs. H.	F	Mar. 17, "	Aug. 9, 1916 (severe).	No.	+ faint.	100	5,990,000	5,200	0·8	56·0	22·5	16·0	4·0	1·5	...	...	" "

* My = Myeloblast.

1. J. B. still an out-patient at Nottingham, 1.3.17. No evidence of cord changes. 2. P. C. Typical changes of aplastic anæmia post mortem. No toxic liver changes. Identical with a previous case at the same arsenal. 3. H. H. states that she has always been jaundiced and her father also. Possibly a case of hæmolytic icterus, but the present blood condition strongly suggests "aplastic" changes in addition. 4. S. S. now very seriously ill and unlikely to recover. (Died April, 1917). 5. E. K. went steadily downhill and died on Feb. 16th of aplastic anæmia. His liver showed the old scarring of his toxic jaundice attack. On returning to work, he is stated *not* to have handled T.N.T. 6. R. R. still under treatment as an in-patient at the Nottingham General Hospital, March, 1917. 11. K. D. now an out-patient. 12. W. B. still an in-patient. 13. H. K. left hospital Dec. 13th, 1916, and has not worked since. 15. E. P. left hospital Jan. 18th. Still complains of lassitude. 20. L. P. died Feb. 3rd. 22. A. J. G. now recovered, but does not feel fit and is not at work.

know practically nothing. This girl was definitely exposed to "fumes," as also were other cases of aplastic anæmia met with in the course of this investigation. J. E. showed little or no staining of the hands, but was sufficiently in contact with T.N.T. to have absorbed a poisonous dose through the skin.

A very similar case has recently occurred under the care of Dr. Christine Pillman, to whom I am indebted for the following account:—

A. P., a woman working in T.N.T., was admitted to the Royal Free Hospital on Feb. 28th, 1917, with toxic jaundice, and was discharged in April. On May 8th her conjunctivæ were still bile-tinged and she developed a well-marked purpuric eruption. On readmission to the Royal Free Hospital the following blood state was found:—

Red cells 2,800,000 per c.mm.	Colour index ... 0·8.
Hæmoglobin ... 50 per cent.	Leucocytes 4600 per c.mm.

The differential count showed—

	%		%
Polynuclear neutrophils	24·6	Eosinophils	0·6
Lymphocytes	74·6	Mast cells	0·2

The case is evidently one of toxic jaundice followed by aplastic anæmia with purpura.[13]

The following is a summary of the conclusions to be drawn from these cases.

Four severe *gastritis* cases examined showed no blood changes of importance.

Toxic jaundice and anæmia appear to be separate and independent pathological states.

Anæmia may occur without jaundice and without liver necrosis.

About 17 per cent. of jaundice cases develop anæmia.

The incidence of toxic jaundice is probably overstated, both in medical certificates and in official reports.

In toxic jaundice the fragility of the red cells is altered as in ordinary obstructive or catarrhal jaundice.

A positive Wassermann reaction in a case of toxic jaundice is evidence of syphilitic infection.

Toxic jaundice proper is a long and serious illness, which may persist for nine months, leaving the patient less fit than formerly, and in all probability with a permanently damaged liver.

The jaundice is due to the action of the toxic substance upon the liver and not to hæmolysis.

The type of anæmia produced is that known as aplastic anæmia. It appears to follow destruction of the red marrow, and is to be differentiated from pernicious anæmia.

The latency of the blood changes may be even longer than the latency of the jaundice. The anæmia may develop so long as nine months after ceasing to work in T.N.T.

The anæmia is extremely fatal, and it is still doubtful if any cases recover from it.

The incidence of the anæmia among T.N.T. workers must be very small.

Purpura may develop with the anæmia and a case may first come under observation with hæmorrhage and a purpuric rash.

Finally, certain animal experiments were performed. Attempts were made to reproduce in animals the changes in the liver and other organs associated with jaundice and the blood changes found in human beings. The actual substance responsible for these changes and the mode by which it is introduced into the system is generally held to be trinitrotoluene itself, which is mainly absorbed through the skin. While Professor Benjamin Moore's work on this subject seems almost conclusive, it was felt that every possibility should be investigated in view of the importance of the subject, and bearing in mind the fact that the changes had not as yet been reproduced in animals by the administration of T.N.T. In these experiments T.N.T. was administered to rabbits through the skin by hypodermic inoculation, as also were D.N.B. and ammonium nitrate. Pure NO gas was administered to rabbits and white rats by inhalation over periods of time. It seemed possible that the spacing of the doses of T.N.T. might be of importance, that a considerable dose followed at the appropriate interval by a further dose might sensitise the animal and lead to poisoning, whereas similar daily doses might be tolerated. This point was investigated in these experiments.

The experimental work is not yet concluded, but it may be stated that the results are for the most part negative. Large doses, up to a gramme, of T.N.T. dissolved in toluol can be given to rabbits without any serious effect. Injections of dinitrobenzol were similarly harmless. NO gas given to rabbits and white rats gave rise to cyanosis, drowsiness, and a yellow staining of the fur, but to no other ill-effects. If the percentage of NO gas in the fume-chamber was allowed to rise too high respiratory distress resulted, and in one or two instances dyspnœa remained for several days, but in no case was sufficient of the gas given to produce a fatal pulmonary complication. The animals, even with small quantities of the gas, showed cyanosis and gave a positive Haldane test in the blood. Neither jaundice nor anæmia was induced in any instance.

In the first part of this investigation I received considerable assistance from Dr. Jenkins Oliver and in the latter part from Dr. R. Paddock. My colleague, Dr. S. K. Vaidya, has helped me throughout, and in particular with the routine blood examinations. Physicians at various general hospitals in charge of these patients have freely placed their notes and cases at my disposal. Dr. Jacob, at Nottingham, and Dr. M. G. Thackrah and Dr. J. A. Barnes, in London, have taken much trouble in finding suitable cases for me. Mr. Minter, the works manager of a factory, greatly simplified the work done on his premises. I am particularly indebted to Dr. W. J. O'Donovan for his assistance and advice. All expenses incurred in connexion with the investigation have been defrayed by the Ministry of Munitions and a grant has been further provided by the Medical Research Committee.

[13] This patient has since died (June 19th, 1917), and was found post-mortem by Dr. Spilsbury to have, in addition to a scarred and shrunken liver, the marrow changes of aplastic anæmia.

WAR SURGERY IN SERBIA:

PENETRATING WOUNDS OF THE ABDOMEN.

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THE object of this paper is to make a plea for operation in all cases of perforated intestine due to bullet wounds. Not only does this apply to cases received in the first 16 hours, but also to those received up to 40 hours after injury, and, in fact, to all cases where condition of patient will allow operation.

The cases mentioned were treated by me at Lady Paget's Hospital at Uskub, Serbia, and consisted of Serbians, Macedonians, and Bulgarians wounded during the Serbian retreat in 1915. The hospital was housed in two blocks and three pavilions. The two blocks were newly built cadet schools and in every way up-to-date buildings. The largest number of cases in hospital at one time was 1040. The conditions for operation were as perfect as possible in any Balkan military hospital, fully trained British sisters being in charge of the wards with Austrian and, later, Serbian prisoners acting as orderlies. The patients were all healthy Balkan soldiers, whose resistant power was second to none.

The conditions in the Balkans are such that comparison with surgery on the Western front is not justifiable, and the best comparison is with the South African War. A review of the literature of the first and second Balkan wars shows what a deplorable state of affairs existed.

The only writers mentioning abdominal cases in those wars are Girault and Laurens. Girault passed the month of November, 1912, at Uskub, where our hospital was situated. He states that the wounds were of about eight days' duration when seen at the ambulance after a long transport. Of 120 cases discharged, taken haphazard, he had not one wounded abdomen. At the Serbian Military Hospital installed at the Grad (a hospital which last year was run on English lines by the Wimborne Unit (2nd) of the Serbian Relief Fund) several hundred wounded were under treatment. Girault saw there only one case of wound of the abdomen, and that not a penetrating one. Thus one concludes that *every* case of abdominal wound causing perforation died. Laurens, having passed 11 months in the Balkans, has made analogous observations.

Treatment.

Medical treatment.—The cases not having operative treatment were placed in the sitting Fowler position. Subcutaneous saline was given by Lane's apparatus, as much as six pints in 24 hours in some cases. Pituitary extract and camphor in oil were given. No food, not even fluid, given by mouth for first three days. For restlessness hyoscine 1/150 gr., morphia 1/6 gr., repeated when necessary. Distension is very difficult to treat in general peritonitis; enemata of all kinds were tried, and a flatus tube was used; eserine salicylate hypodermically was found of no appreciable value.

Surgical treatment: 1. *Laparotomy.*—On admission all patients with lesions of intestine were stimulated, for all were in profound shock from exposure on battlefield and delayed transport. After the case had been stripped and put in warm clothing saline was introduced by Lane's apparatus; hyoscine 1/150 gr., morphia 1/6 gr., were also given. In half an hour open ether was administered by the drop method. Never did I allow chloroform in these cases. Anæsthesia was easily produced, owing to state of patient and preliminary scopolomorphine injection.

Incision was through either right or left rectus, or in mid-line according to site of entrance wound. First I sought for the ileo-cæcal valve and systematically followed the small intestine backwards, bringing each coil out of abdomen for visual examination. Each perforation was sutured with silk by the Czerny-Lembert method. No irrigation of peritoneal cavity. Dry gauze mops and gauze plugging were used to absorb blood and purulent fluid. The exposed coil of intestine was protected by abdominal pads wrung out of hot saline. No clamps were used; an assistant held the perforation on the stretch for suturing. In some cases I put in cigarette drains into peritoneal cavity—one into pouch of Douglas and the other down to most affected coil. The cases that recovered had no drainage-tubes in peritoneal cavity, and I am more and more inclined from results to discard intraperitoneal drainage altogether, except where one has a definite localised abscess. The abdomen was closed in layers with small cigarette drain left down to peritoneum. The wounds always suppurated; this is due to *Bacillus coli*, and so a certain number of antibodies get formed and have a beneficial influence on the underlying general peritonitis.

After-treatment is similar to that described under medical treatment. Most important is subcutaneous saline; it is well to change site of injection from pectoral region to inner surface of thigh alternately. I have given up rectal saline in war hospitals as I find the subcutaneous method much more efficient, and I have not had an abscess or cellulitis at site of needle introduction. Most patients leave the table in better condition than on admission, and cases with no pulse to be felt at commencement of operation have gone to the ward with distinctly perceptible pulse after ether saline stimulation in spite of an extensive operation.

2. *Murphy's operation.*—Murphy, of Chicago, has described excellent results obtained in general peritonitis by this operation, which I practised on one occasion.

Patient wounded 36 hours previously; unsafe to move him into theatre; operation done in bed. About 4 c.c. of 1 per cent. solution of novocain were injected in mid-line suprapubically. Incision 2 inches long through parietes and peritoneum. A rubber tube was then passed down into base of pouch of Douglas. The wound was firmly closed round circumference of tube, where it passed through the parietes, as it is essential not to have any extra-abdominal pressure here. Patient died in 2½ hours.

The intra-abdominal pressure is supposed to cause a free exit of purulent fluid in these cases of general peritonitis. This case is only mentioned as a method of surgical treatment of very bad cases.

Cases.

I. Laparotomy cases of abdominal wounds which showed no perforation of intestine. (Cases 1 and 2; both recovered.)

II. Laparotomy cases (Nos. 3–12) with multiple perforations of intestines of over 30 hours' duration. 7 deaths, 3 recoveries.

CASE 3.—Soldier wounded 32 hours before admission. Entrance and exit wounds showed that bullet had crossed abdomen from right iliac region to left loin. Patient collapsed, pulse imperceptible; abdomen soft and tender in all areas. Laparotomy after half an hour's stimulation by subcutaneous saline. Quantity of blood in peritoneal cavity. Appendix had been amputated by bullet. Eight perforations of small intestine; mesentery punctured in four places. The perforations were sutured and abdomen closed. Death in 14 hours.

An interesting feature of this case was a round worm (*Ascaris lumbricoides*) protruding an inch through a perforation.

CASE 4.—Soldier wounded 39 hours before admission. Entrance wound in left hypochondriac region, exit in left loin. Pulse imperceptible. Abdomen generally tender; no rigidity detected. Laparotomy; five perforations of ileum; general peritonitis marked. Perforations sutured and abdomen closed. Death in 24 hours.

CASE 5.—Soldier wounded 37 hours before admission. Bullet track and condition of patient similar to Case 4. On opening abdomen four perforations of ileum seen. A round worm was seen free in peritoneal cavity, and another had 1 inch of its body protruding through a perforation. Death 60 hours after operation.

CASE 6.—Soldier wounded 34 hours before admission. Entrance and exit wounds showed bullet had crossed abdomen. After saline stimulation immediate laparotomy. Six perforations of small intestine detected. Death on second day after operation.

CASE 7.—Soldier wounded 39 hours before admission. Entrance wound only was seen in umbilical region. Laparotomy; three perforations of small intestine, one of mesentery. Death 60 hours after operation.

CASE 8.—Soldier wounded 35–37 hours before admission. Entrance wound in left lumbar region, exit in right loin. On opening abdomen six perforations of small intestine were detected. Death 14 hours after operation.

CASE 9.—Soldier wounded 32 hours before admission. Entrance wound in left lumbar region, exit to left of third lumbar vertebra. On opening abdomen five perforations of ileum were found. Death in 12 hours.

CASE 10.—Serbian soldier wounded 35 hours before admission by bullet at about 400 yards range. Entrance wound midway between pubes and umbilicus, exit in left loin. On admission patient in profound shock; had walked 12 kilometres and been conveyed 13 in Balkan carriage. Pulse imperceptible. Abdomen slightly distended; very slight tenderness on pressure, but no special area tender; recti not rigid. Laparotomy after preliminary stimulation for half an hour by saline subcutaneously. General peritonitis; four perforations in third foot of ileum (two double perforations about 5 inches apart). On manipulation contents began to escape. The perforations were rapidly sutured, peritoneal cavity closed, and small cigarette drain inserted in parietes. Uneventful recovery, except that parietal wound became septic. Three months later the patient, who had been taken prisoner in hospital by the Bulgarians, was sent to prisoners' compound.

CASE 11.—Soldier admitted 36 hours after wound. Bullet had crossed abdomen antero-posteriorly from left anterior lumbar region. Condition of patient similar to Case 10. Laparotomy; three perforations of small intestine. Perforations sutured and wound closed as in Case 10. Uneventful recovery, except that for three weeks T. was intermittent, as high as 104° at times. It gradually fell, and three months later patient was ready for discharge.

CASE 12.—Soldier admitted 34 hours after bullet wound of abdomen. range unknown. Entrance wound was a fine perforation situated on right linea semilunaris on line joining anterior superior spine and umbilicus; exit wound an inch to left of mid-line posteriorly. Abdomen slightly distended; definite tenderness over right iliac region. General condition of patient bad, but better than in Cases 10 and 11. Pulse felt, but 135 in rate. Complete paralysis of right leg. Laparotomy; two perforations of cæcum in same plane; bullet had entered on anterior and passed out on inner surface. Some weak adhesions present in neighbourhood. The perforations were sutured. No perforations of small intestine discovered. Abdomen closed with tube to parietal peritoneum. Good recovery, although wound suppurated badly. Paralysis of right leg passed off, and 2½ months after operation patient was discharged for convalescence.

In all the above ten cases I believe death would have occurred had there been no interference. The pulse was perceptible on admission in only one case (No. 12). All had suffered from exposure on battle-field and in transport for over 30 hours.

III. Cases (Nos. 13–19) of over 30 hours' duration, due to a bullet wound, treated by abstention treatment. 7 cases, 7 deaths. These cases were consecutive, and were taken as a control to test the abstention treatment as compared with the laparotomy cases, also consecutive.

IV. Case (No. 20) of over 30 hours' duration, treated by Murphy's operation. One case; death in 2½ hours.

V. Two autopsies (Cases 21–22) to demonstrate death due to hæmorrhage.

CASE 21.—Wound received over 30 hours previously. Died in receiving-room in 10 minutes. Autopsy: Bullet had passed through right gastro-epiploic artery of stomach; abdomen filled with blood. Also perforation of stomach at point where artery had been severed. Undoubtedly had this case been operated on within 25 hours of receiving the wound, he would have lived.

VI. Three cases (Nos. 23–25) illustrating rigidity of recti due to injury of diaphragm; all recovered.

VII. One case (No. 26) of abdominal wound, cured spontaneously at home. In this case obviously the bullet had missed the intestine. It is mentioned as a case which the abstentionists would probably have classed as a cure.

Comments.

Out of several thousand wounded all cases of penetrating wounds of abdomen were sent to our hospital, so it is correct to state that all such cases not sent to us died on the battlefield.

Hæmorrhage is the most frequent cause of death in penetrating wounds of the abdomen in the first hours. Cases 21 and 22 are remarkable examples of hæmorrhage from larger vessels (gastro-epiploic and hæmorrhoidal veins) surviving 30 hours.

The round worm (*Ascaris lumbricoides*) was present in Cases 3 and 5. I have not been able to find any reference to such an occurrence. It is a question whether the worm in Case 5 escaped through the perforation during the operation. If it were in the peritoneal cavity immediately after the wound occurred it would constitute a method of spread of peritonitis. It could break down any weak adhesions during its exit, and also it could carry *Bacilli coli* and so inoculate distal parts of the peritoneum. This is pure conjecture, and the opinion of a helminthologist would be interesting. Most people in the Balkans suffer from these parasites, and the matter is therefore of importance.

Intermittent rigidity of the recti muscles is an important sign of an injured diaphragm (Cases 23, 24, and 25). In all, the wounds were such as to coincide with a wound of the diaphragm, and the question arose whether in addition there was any visceral lesion. The cases, seen soon after injury, exhibited an "intermittent rigidity" of both recti lasting

for several minutes, and then the recti would become flaccid for about an hour. This sign passed off after about 36 hours. It is not to be confounded with the rigidity of peritonitis.

Many cases of spontaneous recovery of penetrating wounds of the abdomen have not had a perforation of the intestine. A bullet can cross the abdomen without causing any material damage to the viscera (Cases 1 and 2). The correct treatment of penetrating wounds of the abdomen due to bullet wounds is immediate laparotomy after preliminary stimulation with saline. This treatment ought to be carried out in all cases and at all stages after injury, for recovery may result in the worst cases, even of over 30 hours' duration (Cases 10, 11, and 12). Operation can only be performed successfully in a favourable surgical locale, and each division ought to have a mobile ambulance where such cases can be treated without passing through the various other stations.

Note.—Since writing above I have had the pleasure of seeing the motor operating theatre to be presented to the Italian Army by the Wounded Allies Relief Committee. I was very pleased to hear from Sir William Collins, the designer, that another was being built for the Belgian Army.

SOME OBSERVATIONS ON TRENCH FEVER.

BY E. R. GRIEVESON, M.B., CH.B. EDIN.,
CAPTAIN, R.A.M.C. (T.C.)

MY attention was called insistently to the nature of this disease by having six bouts in two separate attacks of trench fever (hereafter called "T.F.") in May and August of 1916. I had seen some hundreds of cases previously. I observed at that time that it appeared to be infectious, four cases occurring in a single dug-out containing five men, and no cases occurring, so far as I can remember, among the remainder of the men belonging to a group of batteries at that time. Just before my first attack there were a number of cases of catarrhal influenza in the headquarters' mess to which I at first attributed my condition. I was, however, speedily disillusioned by the temperature chart (three days fever, three days no fever) and by the absence of catarrhal symptoms.

At this time, from previous experience, I was of opinion that 90 per cent. of cases of aches and pains in the back and lower limbs with temperature in officers were influenza and 10 per cent. trench fever, while among N.C.O.'s and men the converse ratio obtained. This, of course, was based on the rough provisional diagnosis which a battalion M.O. may well make after seeing a large number of cases. From a subsequent experience I am of opinion that many of the influenza cases were really T.F., while influenza did exist on the Western front. About a month after my first attack I had breathlessness and tachycardia on exertion. For instance, my pulse ran up to 240 after playing a set of tennis, exerting oneself as little as possible. True dilatation was not present and the cardiac condition appeared to both a specialist and myself to be purely nervous in origin. I succeeded, however, in assisting, in the French sense, at the battle of the Somme for two months, being fortunate enough to have the use of a motor cycle or a car for half this period. I became infected again with T.F., and as I found it impossible to walk 20 yards over rough ground without breathlessness I was evacuated to England.

On one matter I held from experience a very clear and firm opinion. With such a heart it is essential to walk slowly and without impedimenta, even a 10 lb. haversack rapidly causing distress, while as long as one walked slowly no ill-effects were felt.

On returning to the front in December, and joining a battalion about the middle of January, with which I remained two months, I observed five cases of T.F. (considering as such the various types otherwise described as X disease, P.U.O., &c.) which occurred in a single dug-out holding eight men, within 16 days, the sixth man having had it previously. Every case had a heart affected similarly to my own, but in less degree.

I suggested provisionally that T.F. should be considered as infectious, early notification, isolation, and, in view of the supposed association with lice, that energetic de-lousing methods should be proceeded with. Major Hurst's paper in the *Journal of the Royal Army Medical Corps* of February, 1916, had not then been published, nor did I see this until the end of March. Owing to the exigencies of the military situation radical measures could not be proceeded with, and I found it necessary to keep a number of T.F. cases in a sick dug-out.

For the first month my records are not as complete as they might be, but on appointing a clerk who was both capable, reliable, and understood scientific and statistical methods, results were obtained which appear to be of some importance. At the end of the first month I found that 40 per cent. of my hospital evacuations were trench fever. We came across then in THE LANCET the record of a single experiment showing that a louse could transmit T.F., the incubation period being 14 or 15 days. Taking this as provisionally probable I set to work to get records of all the men with whom each case coming to me with T.F. symptoms had slept for a month previously. This, owing to battalion arrangements, and owing to the fact that cases grouped themselves markedly in platoons, was easier than was expected, and the evidence of unreliable men could frequently be checked by that of those more reliable.

On March 10th I reported that there was practically no sickness of any importance in the battalion from a military standpoint, with the exception of T.F. and a few cases of diarrhœa. T.F. had by this time so increased that it was now 66 per cent. of all cases (excluding eyes and teeth) coming sick to me.

Trench fever is stated to have been known to the Belgians before trenches formed an unhappy feature of the landscape; it was known to at least one doctor in Serbia in one of the Balkan wars—and, as far as I can discover, at that time was undiagnosed; it was recognised, as Major Hurst records, at Salonica, and known to Austrian troops in the Tyrol and to Germans on the Eastern front. With regard to the general diagnosis I agree with practically all of Major Hurst's conclusions. The essential point to remember, which I verified by subsequent observation in about a hundred cases, is that when a man comes complaining of aches and pains confined to the lower parts of the body, more particularly in the small of the back, and almost certainly down the legs, probably, but not necessarily, in the shins (deep in the bone), with a fairly high temperature at night, looking well, though flushed, with clear eyes, and probably with a tongue which I shall describe later, a history of sudden onset and of more acute pain in the night than in the morning, when trench fever is known to be in the battalion or unit—then the chances against this patient suffering from T.F. are remote in the extreme. As an instance I showed to my C.O. before making an examination a man with an exceptionally healthy appearance, a normal temperature, a smile as he described his agonies of the night before, and his pain in the back resembling the lumbago of unenthusiastic soldiers, and I pointed out how that man might easily be mistaken for a malingerer; but I stated also that he might quite well have a temperature of 103° at night, which actually occurred. The secret of the prophecy lay in the fact that he had a fast pulse, which differed from the malingerer's pulse by remaining fast when his attention was distracted from his ailments.

When I was leaving my battalion, Private Norman Graves, undeterred by either the enemy, or, what was worse, the cold, or, what was worse still, trench fever, with a temperature of 103°, carried the major portion of the work which follows almost to its conclusion.

About one quarter of the trench strength of the battalion suffered from T.F. within approximately two months; about one-half of these were studied carefully, exact records of each being taken in shorthand, and charts showing the time distribution, the platoon distribution, and the bedmate distribution were made, with, in addition, graphs of frequency. Among the companies in the line all had within 22 days practically the same number of cases, with the exception of one company with about 30 per cent. less. This company, curiously enough, differed from the rest in allowing men to sleep, not necessarily in the same groups (which in other companies remained more or less permanent), but more or less as they pleased. As, however, I cannot state to what extent this company had suffered previously owing to the deficiency in the earlier records, nor the extent of the constant redistribution of the men no accurate deduction can be drawn. I believe, however, that the company had suffered previously badly, and, in fact, worse than the others. When

the cases were classified by platoons very striking results occurred. Platoons as such slept together in groups varying from 3 or 4 to 10 or 20, the one in trenches and the other in rest. Certain platoons were found to lose within a month 60 per cent. of their numbers by T.F., while other platoons lost practically none. No difference of conditions could be found in either case. In a number of cases if a man unknown to me came with temperature and aches and pains in the lower half of his body, as soon as he told me his company I would inform him which platoon he was in, subsequently verifying the diagnosis, and in a few cases without consulting my records I managed to tell him with whom he slept a fortnight previously, and conversely my clerk would prophesy in the main correctly who was to be expected on sick parade with the typical symptoms during the next few days. When, however, the cases were studied by their bed-mate groups (to be strictly accurate the definition of a bed might not satisfy purists either of style or comfort) the results were still more striking; for all but a very few cases could be traced to small groups of bedfellows, or rather co-sleepers, so that if a man slept with one group at the approximate time he ran 50 times the chance of getting T.F. than if he had slept with certain other groups in the same companies.

The typical case was as follows:—

A man, or quite frequently a N.C.O., would go sick with T.F. on, for example, Feb. 1st. On Feb. 15th one of his two or three co-sleepers would take T.F. and a day or two afterwards either the whole three, or two, of his co-sleepers would fall sick. The same thing would happen when the first case occurred in rest billets, but then only a certain proportion of his co-sleepers would fall victims out of the larger group. On this date, the 15th, he would himself fall sick again—in many cases. In such an event the original case having returned to his fellow-sleepers, or rather to what remained of them, or finding other bed-mates, he (typically) would infect them and they would fall sick on March 1st, on which date he might possibly have another attack, or not. In either case a certain proportion of his co-sleepers would fall sick on March 15th, one generally to the day, the others a day or two afterwards. All these cases were liable to infect new co-sleepers, and some of these co-sleepers would fall sick 14 days later. It must be stated frankly that the isolation of the cases was not such that other possibilities of infection were fully excluded, but from the study of the whole number of cases no other conclusion was possible than that T.F. has an incubation period of 14 days, possibly plus or minus one day.

So marked was the infectivity that out of all the platoons in the line one half had six and a half times as many cases as the other half, though men were occasionally transferred from one platoon to another. The crucial point that the blanket-mate was immediately infected while other co-sleepers were infected a day or two later lacked sufficient evidence to prove it; but it appears to me sufficiently probable that the disease may well be called "blanket-mate fever," though even the blanket may in some cases be missing. As to the carriage by lice, no other conclusion could be arrived at, leaving out of account the recent alleged discovery of the spirochæte in the louse. While obviously infectious in my series of cases T.F. is practically non-infectious in England; is much less infectious under better conditions a few miles behind the line than in the line itself, and varies roughly in infectivity in proportion to contiguity.

It is well known to men, but not always to the authorities, that under cold conditions blankets are practically always shared by adjacent men in the line; that under rough conditions behind the line this also occurs, while under comfortable conditions this does not occur. As to the travelling capacity of the louse, so much is this believed in that many men are convinced that the louse has a special predilection for non-lousy men, so that if a clean man sleeps with lousy men even for a single night he is at once singled out for attack by a raiding party. This, however, is a fallacy. The better class of men (if lousy at all) catch on the average from 3 to 10 lice a day, and generally obtain a night's rest as a result of their exertions, while the less enthusiastic or more pessimistic men catch none, and harbour from 20 to 1000 lice. It is obvious that a few lice travelling from a very lousy man will be more noticed by a non-lousy man or slightly lousy man than by one who is "crawling." Bearing in mind that only a proportion of lice are infected with the virus, I found the distribution of T.F. far more closely following the general distribution of lice than of any other probable cause; for instance, officers suffer less than men, and when single cases occur among officers T.F. does not become markedly epidemic among them.

The transport was practically non-lousy, and only a single case occurred in two months. Headquarters company, under better conditions than the rest, had one-tenth of the expectation, according to company distribution. I found them fairly free from lice.

As to the question of over-work causing T.F., my observations are by no means in harmony with this. Nor is the distribution of T.F. *pari passu* with the fatigue of individual men or individual groups. T.F. attacked alike those who had responded to the call of Lord Kitchener and those who gave a somewhat less energetic response to that of Lord Derby. The number of cases during the exceedingly cold weather of February was larger than that during the damp and sloppy weather of January, while other illnesses decreased. Non-commissioned officers, too, who are somewhat less exposed to fatigue than men were attacked at least as freely as the men, and in some cases more so. The explanation of the belief that exposure is an essential is that when exposure occurs men share blankets and sleep closer to one another. When over-fatigue occurs not only are official methods of de-lousing apt to be postponed but the men themselves pay less attention to de-lousing themselves by their own methods. As these require about an hour a day, as the hunter will assure you, it is natural to find them omitted

Against the louse-borne theory there are the following facts: N.C.O.'s are at least as liable to T.F. as men, and while, as Peacock shows, 95 per cent. of the infantry are lousy, this percentage does not hold with N.C.O.'s as a rule.

As for myself, I have never found a louse on myself or my clothing, and in view of these facts the following is put forward speculatively as an explanation. Apparently there is an immunity to louse-bites as opposed to lousiness. In a number of battalions where 90 to 99 per cent. of the men admit some lousiness I have repeatedly found that only 5 to 10 per cent. show obvious marks of louse-bites. If such an immunity exists, and such immunity is only partial, a single infected louse may infect a fairly immune man, while a man who harbours 50 to 1000 lice does not increase his liability in the same proportion, in view of the fact that the sources from which he draws his lice are frequently more restricted than that of the N.C.O.'s.

The explanation of the cases, of which I have a fair number, re-infecting themselves after 14 days has yet to be sought. The type is apparently essentially a carrier. He starts the trouble in several of my instances, and infects one other, as a rule, exactly 14 days after the date of his first attack, others a day or two afterwards, and in odd instances he is found to be again feverish 28 days after his original attack.

The tongue of trench fever, which I have not seen previously described, occurs typically on the first day, is very marked during the pyrexial period, occurs in perhaps 80 per cent. of cases, remains as a rule during the first week or two, and can sometimes be recognised as much as three months afterwards. It is characterised by a red margin $\frac{1}{4}$ to $\frac{1}{5}$ of an inch wide, with a thick and bright yellow fur covering the rest: this fur during apyrexia may be dull and slightly brownish in appearance, especially in those of bilious temperament. The arterioles on the side of the tongue may be markedly injected. So characteristic is this tongue that stretcher-bearers, whose virtues were military rather than medical, would frequently make a provisional diagnosis for my information which I subsequently confirmed.

As to the sequelæ of T.F. the most important observed were anæmia and disordered action of the heart. The anæmia comes on in about 10 to 15 per cent. of cases, the intensity and duration of the preliminary fever bearing a certain relation to this. One or two cases were observed where good keen men had "stuck it," doing their duty in the trenches with night temperatures up to 102°. One such, an orderly corporal, who would not go sick during the first three days, though with the fever and weakness he could barely walk, was observed, and at any time up to three weeks afterwards could be recognised as anæmic, by those who knew him, at a distance of 50 yards.

Tachycardia is, as far as could be observed, practically always to be found in these cases. The importance of

it and dyspnœa from a standpoint of battalion efficiency is very marked, for we give no information to the enemy in stating that more than three-fourths of modern warfare is sheer hard labour. The same type of effect is probably produced by the sequelæ of T.F. as is produced by malaria in tropical countries among military expeditions. Willing, keen men are unable to do their work for physical reasons, and from the sense of undue over-exertion become depressed in mind. T.F. itself and its sequelæ do not appear *directly* to cause depression of spirits to any marked extent in the later stages. Officers, for instance, complain little of this, their chief complaint being that they feel the cold badly. Men who have borne reputation for ability to avoid the trenches are in some cases chronic mild trench fever cases, who by their ingenuity in inventing symptoms have failed to receive attention for their real disease. The temperature, however, is slightly raised, the typical tongue is often present, and the pains mild and diffused but real. When they are reduced to telling the truth a previous history of T.F., generally fairly acute at the outset, is obtained, and the type appears to be the 14-day type, and they seem to be carriers.

As to treatment, sedatives appear useful and massage, in my opinion, concentrates the attention like massed artillery upon the aching shins, and malingering may easily be produced. The pains appear to bear very fairly exact ratio to the temperature. Patients seem to do well either staying in bed or taking exercise, but moping all day in an attitude of depression is bad.

A clear understanding that the disease runs its course, carrying with it some to "Blighty," and none to a better world than that—that the painless period of apyrexia may continue indefinitely, and if it does not the pain will certainly be less than before, will do more to assure and relieve the vast majority of patients than anything else.

I have frequently tried to verify the statement that the temperature may go up suddenly as a result of exposure to cold. While it may occur I found no evidence of it even in the early stages of the disease. I do not see, *pace* the cardiac specialist, that the tachycardiac case should not take on the duty of a sentry even with this condition. Sergeants, for instance, are able to carry on for a considerable period with very marked tachycardia, and are apparently unaware that they suffer from it until they exert themselves unduly, as in training.

The T.F. man is not liable to feel the cold unduly provided he is well wrapped up, and displays a little intelligence; with the cöoperation of the cooks, bricks can be heated, covered with sandbags, and placed between the blankets, even within earshot of the enemy. (Such bricks will remain warm for about three hours and can be used successfully for wounded men either when waiting to be dressed or during transport down the trenches.)

The alternative to such a use of men as this is months of rest and light duty. Unhappy and painful meditations as to whether the sergeant in charge has given one too much work for light duty constitutes sometimes the major portion of the work done. From my own and a few other cases it appears that the cardiac condition tends to cure itself in time, nature being the best guide as to the maximum of exertion advisable. There must be no tall peaks on the graphs of the curves of energy expended per minute or per hour, but without impedimenta and with suitable intervals of rest it is quite possible for such a case to cover 10 to 15 miles in a day on good ground, without distress or apparent harm even with a pulse of 240 on undue exertion.

In view of the incidence of this disease and the nature of its sequelæ it is of grave import from a military standpoint. Captain Muir shows[1] that in eight successive months, while a division was actively engaged, 350 cases per month were sent to the three field ambulances; add to these the D.A.H.'s derived from T.F. cases but only admitted as D.A.H., and add, too, the undiagnosed cases (and such form a large number, I believe), and you have a morbidity rate which can only be equalled by such plagues as typhus, or as typhoid formerly, or as malaria.

As to prophylaxis, I cannot do better than quote from Major Hurst: "As the disease is probably conveyed by lice, which become infected by biting a patient during an attack, every effort should be made to keep troops free from them. All cases of T.F. should either be sent to hospital or isolated, and the patient's clothes and bedding should be specially disinfected as well as that of men who have recently slept near him, and after the initial or second attack a man is often able to return to duty. It is very important that he should be kept under observation, and if he again becomes verminous his clothes and bedding should again be disinfected. Men who are still having attacks or have recently recovered should sleep together, isolated from the other men in their unit, but there is no reason why they should not work with them."

To this I am only anxious to add that the value should be insisted on of early diagnosis, notification, and isolation in hospital.

[1] Brit. Med. Jour., Nov. 11th, 1916.

THE PRE-MENINGITIC RASH OF CEREBRO-SPINAL FEVER.

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VARIOUS observers[1] have noted that there may be an erythematous rash in cerebro-spinal fever—Rolleston[2] in a recently published series of 95 cases mentioned it as occurring in 5, whilst in another 5 there was a so-called rose rash; but no one, so far as I am aware, has remarked upon the time relations of this eruption to (*a*) the onset of the illness, and (*b*) the first symptoms of meningitis. In a fair experience of the disease (about 50 cases) I have in 3 cases seen this erythematous rash; it was in each instance observed very early after the onset, and before there were any symptoms of meningitis to suggest the diagnosis, so that it is perhaps worth recording the details.

CASE 1.—Private T., aged 32 years, had been in hospital for five days with dyspepsia; there were no physical signs of organic disease. At 2 A.M. he woke up with a fit of shivering, complained of headache, vomited, and was restless. His temperature later in the morning was 102°F., and when examined at 10 A.M. he showed a profuse rash on the chest, abdomen, and back. This consisted of erythematous spots of about the size of the finger-nail, which faded on pressure, and were just distinctly papular to the touch. There were no physical signs except a little sticky pharyngitis. Kernig's sign and neck stiffness were looked for, and were not present. Later in the morning this rash began to fade on the trunk and to appear on the legs and arms, and by 2 P.M. had disappeared entirely.

At 3 P.M. the patient was examined by a consulting physician and neurologist, who suggested malaria as a possible diagnosis. He was next seen at 5 P.M., when he was irritable, complained of pain in the back of the neck, and showed a positive Kernig's sign. Lumbar puncture performed at 7 P.M. yielded fairly turbid fluid under pressure, containing meningococci and pus cells.

CASE 2.—Cadet B. was admitted to hospital one morning for acute tonsillitis of two or three days' standing. He had a temperature of 100° F. and a rapid pulse. There was a sticky greyish exudate on the fauces, extending on to the soft palate, and the question of diphtheria was raised in diagnosis. There were no signs of meningitis present either on admission or on the evening of the same day.

At about 6 A.M. on the following day an erythematous rash was noticed on the trunk, and the patient was seen by a medical officer, who ordered him to be treated with precautions as a possible case of measles. At 10 A.M. the rash was fading on the trunk but well marked on the limbs, including the palms of the hands and the soles of the feet. The individual spots were distinctly raised and averaged about the size of a threepenny-piece. The mental condition was rather confused, but there were no definite signs of meningitis. At 1 P.M. there was a little neck stiffness and a doubtful Kernig's sign, and the spots were now fading from the hands and feet.

Lumbar puncture was performed and a faintly opalescent fluid was obtained, which on standing showed a fine fibrinous clot containing meningococci.

CASE 3.—2nd A.M. L. was taken suddenly ill in the middle of the night and admitted to hospital next day at 1 P.M. The medical officer on duty found that he had a temperature of 100° F. and an erythematous rash on the trunk which suggested measles. He examined the patient for signs of meningitis, which were not present. At 7 P.M. the erythematous spots had vanished from the trunk, but there were a few present on the hands and feet which were already fading. In addition there were now present on the trunk and limbs fine scattered spots typical of cerebro-spinal fever, the patient was confused and incoherent, and neck stiffness and Kernig's sign were both definitely present.

The cerebro-spinal fluid was turbid and contained pus and meningococci in large numbers.

In Case 1, where the patient was under observation from the onset, there was a profuse rash to be seen six hours later, which had disappeared four hours after it had first been observed. In Case 3 the erythematous rash was present 12 hours after the onset and had almost disappeared six hours later. In Case 2 the probability is that there was primarily a local meningococcal infection of the throat and naso-pharynx, and that this became a general infection after

[1] Osler's Medicine. [2] THE LANCET, 1917, 1., 55.

the patient's admission to hospital. Probably therefore in all three cases the rash had made its appearance and faded away within 24 hours of the onset of the general infection, and it was certainly a striking feature of each case before meningeal symptoms suggested the diagnosis.

These cases tend to confirm the hypothesis put forward by Lundie, Maclagan,[3] and others that there is a septicæmic stage in cerebro-spinal fever which precedes the meningitis, and fall into line with a most interesting case[4] recently reported in THE LANCET in which agglutination tests afforded evidence to show that an infection of acute onset with an early rash, similar to that described above, was a meningococcal septicæmia which had stopped short of meningitis.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

PURPURIC AND CEREBRAL SYMPTOMS OCCURRING IN THE DEFERVESCENCE OF ENGLISH MEASLES: TWO FATAL CASES.

BY T. GODDARD NICHOLSON, M.B., B.Sc. LOND.

THE invasion of morbilli is often accompanied by grave disturbances of the hæmic and nervous systems, but occurrence of these serious lesions after the defervescence is not so well recognised.

CASE 1. *Purpura, convulsions, and mental symptoms following defervescence; recovery.*—A youth, aged 17 years, whose fever and rash had subsided on the fifth day after the first appearance of the severe eruption and who seemed to be well in the afternoon of that day, became suddenly unconscious at 7 P.M. He fell over on his right side, breathing stertorously, and convulsions affecting the whole body soon succeeded. These spasms lasted with but short remissions for 15 minutes. At the end of this period he was easily roused, but appeared terrified, as he could not see. The pupils were semi-dilated, but no optic neuritis or hæmorrhages in the retina were detected, the knee-jerks and the other reflexes were normal. Synchronously with the unconsciousness a coarse purpuric rash appeared on the face and neck, which quickly spread over his whole body. Within an hour of his seizure the youth became very restless, delirious, and made violent attempts to get out of bed, while "insanity of location" developed. Hyoscine hydrobromide 1/100 grain, morphine hydrochloride ¼ grain, were injected, determining tranquillity and a peaceful sleep, which lasted for 14 hours.

On awakening a condition allied to that of "cerebral irritation" after head concussion had developed. In this condition he remained for four days, when, with the fading of the purpuric rash, he recovered completely. Retention of urine and incontinence of fæces accompanied the mental symptoms. A marked retraction of the head on the first day after the seizure, coupled with Kernig's sign, determined a lumbar puncture, but the clear fluid obtained was normal to both chemical and microscopic tests.

On his recovery the patient had no recollection whatever of his attack, nor of any events occurring while mental aberration obtained, but he recollected the transient blindness at the incidence. On the nineteenth day after the appearance of the measles rash he was quite well.

CASE 2. *Mental disturbance after defervescence; recurring hæmatemesis; death.*—A youth, aged 15 years, on the second day after the severe measles rash had developed, and when it had begun to fade and the temperature had fallen to 100·8° F., commenced vomiting food with altered blood. A persistent hæmatemesis ensued, accompanied by severe constant pain over the fundus of the stomach, which was not distended, nor were any signs of perforation present. The obstinate vomiting was uncontrollable by drugs and caused great exhaustion, but ceased after 80 hours.

Soon after the incidence of the emesis the fading rash became much duskier, while the boy became delirious, restless, and lost his orientation power. With the cessation of the vomiting the mental condition became normal, the appetite returned, and food was retained. Except for a slight bronchitis he seemed well, and on the sixth day after the first sign of rash the temperature fell to normal. However, on the following day persistent hæmatemesis with great pain over the fundus recurred with a gradually rising temperature. The boy became cyanosed and collapsed, while the temperature rose to 105° F., and despite the exhibition of warm oxygen and cardiac stimulants he died of heart failure on the eighth day following the morbillar eruption.

CASE 3. *Mental symptoms complicating defervescence.*—A youth, aged 17 years, whose temperature and pulse had fallen to normal on the sixth day following that of the eruption, became on that day delirious, restless, and affected by "insanity of location." After persisting for 48 hours, without any febrile developments, he fell asleep and after a quiet night woke up in a normal condition. He suffered no other complication and was discharged well on the sixteenth day after the development of the rash.

CASE 4. *Mental symptoms with the defervescence, accentuating later and followed by acute appendicitis; recovery.*—A well-developed male, aged 39 years, showed marked restlessness as his acute rash faded and the temperature and pulse subsided on the fourth day after the eruption showed itself. On the fifth day, while the temperature and pulse were normal, great restlessness associated with delusions of persecution and "insanity of location" developed. Persistent insomnia was unaffected by repeated doses of hyoscine and other hypnotics and the patient remained insane for three days. Incontinence of urine was nocturnal only. At the end of the eighth day he seemed to be quite recovered and kept well until the sixteenth day from the rash, when he complained of abdominal pain and again became slightly delirious. Acute appendicitis was diagnosed and a successful operation was followed by a complete recovery. Both ether and chloroform were used for a prolonged anæsthesia (1½ hours), but no further mental symptoms occurred.

CASE 5. *Broncho-pneumonia accompanying the eruption, followed by mental symptoms, tremor, paralysis, and death.*—A male, aged 21, presenting some signs of "giantism," developed a severe measles rash which had faded on the third day, although accompanied by a broncho-pneumonia. On the sixth day following the rash the patient became restless and slightly delirious. These symptoms increased during the following three days, but the chest signs were not serious. On the ninth day following the eruption a very marked restlessness and nervous anxiety as to his own condition developed, although the pulse was good and the bronchitis had diminished, while retention of urine and incontinence of fæces obtained. The delirium increased, and a marked coarse tremor with slight rigidity affected both upper and lower limbs and the jaw. This state persisted for two days, when retraction of the head, absence of both knee-jerks, and well-defined Kernig's sign determined a lumbar puncture, though there was no optic neuritis. The cerebro-spinal fluid was under no increased pressure, and both chemically and microscopically was normal.

The tremor increased considerably, and one or two convulsive seizures occurred before he became unconscious and died of heart failure on the twelfth day following the measles eruption. In this case the temperature never fell below 101° F. from the fourth day of the rash, and remained above 102° thence on till death. After death the rectal temperature was 104·5°.

The autopsy showed a mild broncho-pneumonia, some injection of the grey matter, and slight enlargement of the pituitary body.

Two other cases showing similar symptoms to Case 3 occurred subsequently.

Dr. Charles R. Box and Sir John Broadbent have suggested that these cases should be published to afford some starting point for future workers.

London Fever Hospital, N.

[3] THE LANCET, 1916, ii., 1054. [4] THE LANCET, 1916, ii., 1010.

NOTE OF A CASE OF RECOVERY AFTER THROMBOSIS OF THE SUPERIOR VENA CAVA.

By MARY I. HOUNSFIELD, M.R.C.S., L.R.C.P.,
HOUSE PHYSICIAN, ROYAL DEVON AND EXETER HOSPITAL.

THE fact that recovery has taken place renders the following case of interest.

Patient, aged 42, a nurse in an institution, on Feb. 15th, 1917, while on night duty, was suddenly taken ill and vomited twice. She noticed then that her face was very blue. She continued on duty for three nights and then went to bed for three weeks, after which she was admitted to the Royal Devon and Exeter Hospital, Exeter, under the care of Dr. W. Gordon. On admission her face was cyanosed. All the superficial veins of head, neck, and upper part of chest were dilated and engorged. Venules were dilated down to the costal margin. Face, neck, and upper chest were much swollen, but there was no pitting on pressure and no œdema of the eyelids. The swelling gradually subsided with rest in bed, but the veins remain somewhat dilated and cyanosis of the face recurs from time to time. Very marked transient cyanosis after slight exertion on April 14th.

Clinical examination of the chest revealed nothing abnormal, except a localised musical systolic murmur to the right of the lower end of the sternum on admission. This murmur soon disappeared. The right kidney was unusually palpable, abdomen otherwise normal. No enlarged cervical or axillary glands. No tumour of breast. No œdema elsewhere. Urine normal. Blood count normal. A very thorough radioscopic examination of the chest was made early in April, and absolutely no evidence of aneurysm, mediastinal glands, or tumour of any sort could be found.

Examination has thus excluded any cause of external pressure on the superior vena cava, and the only diagnosis possible is some internal obstruction, probably thrombosis. Slight dilatation of the veins still persists, but the patient feels well and is anxious to return to work.

The case is reported by permission of Dr. Gordon.

HOSPITAL SUNDAY FUND AT BRISTOL.—The Hospital Sunday Fund collections in Bristol for 1917 amounted to £3000. This is a record, and the Lord Mayor of Bristol (Dr. Barclay Baron) was congratulated by the members of the committee on the result of his efforts. £2800 have been given to the larger medical charities and the balance allocated to the smaller medical institutions. The Royal Infirmary received £1218, which is more than the whole collection for the first year of the Fund (1899).

JOURNALS.

The Philippine Journal of Science, Section B, Tropical Medicine, Vol. XI., No. 4.—This number contains three articles, the first of which is by Dr. Otto Schöbl, who describes some experiments on the relation between the amount of cholera culture injected into the gall-bladder and the state of cholera carriers in experimental animals. His conclusions are that the inoculation of a relatively small amount of cholera vibrios into the gall-bladder may produce carriers in animals, but the results are not as regular as they are when larger amounts are used for the inoculation; the amount of the inoculated material does not seem to have any direct bearing on the duration of the carrier state in animals according to his experiments. Dr. Schöbl also contributes a short article on the influence of bile upon the duration of the state of cholera carriers in experimental animals. The object of his investigation was to gain information with regard to the relation of cholagogues to the state of cholera carriers, and as a result he found that the increased flow of bile does not further the disappearance of the cholera vibrios from the gall-passages and from the intestine. On the contrary, his experiments "seem strongly to indicate that the administration of bile, a cholagogue *par excellence*, tends to prolong rather than to shorten the duration of the state of cholera carrier." The third article is contributed by Dr. H. Windsor Wade, who discusses Carbohydrate Fermentation by *Bacillus Pestis*, comparing certain American strains from New Orleans and Oriental strains from the Philippine Islands; he gives also an analysis of discrepancies of fermentation with Hiss's serum-water, litmus-agar, and bouillon. Ten strains of *B. pestis* were employed, and comparison failed to demonstrate any distinct difference, qualitative or quantitative, between fermentative activities of Philippine strains and those from New Orleans. There was, on the other hand, a rather remarkable agreement between the different strains except with regard to glycerine fermentation. He found veal-infusion the most suitable medium for carbohydrate fermentation of *B. pestis*. Litmus-agar was more favourable than Hiss's serum-water unmodified, the latter being quite unsuitable. The types of media and the different sugars used had various effects, some of which were very definite and constant, on the amount of growth and on the morphology of the organism.

The British Journal of Ophthalmology, Vol. I., Nos. 4, 5, and 6 (April, May, and June).—These numbers of the *British Journal of Ophthalmology* contain, in three parts, a most important paper on bitemporal hemiopia, the later stages and the special features of the scotoma, by H. M. Traquair. Dr. Traquair has devoted an immense amount of care and attention to the finer details of the scotomata found in cases of bitemporal hemianopia due to involvement of the chiasma and optic tracts, whether caused by disease of the pituitary body or other mechanism. He has mapped out the relative scotomata which are so common in these cases, employing a method of great delicacy, modified by himself from the methods generally in use. Physicians and surgeons alike meet with cases of acromegaly, pituitary disease, and other conditions in which bitemporal hemianopia is a prominent symptom. They cannot afford to ignore this paper, which, in addition to examining the current theories of the mechanism of production of the field defects and providing an excellent bibliography of the subject, adds details of considerable value to our knowledge. Amongst the prominent ophthalmologists who have recently died are Mr. W. H. H. Jessop and Dr. Wendell Reber, of Philadelphia. These numbers contain a biographical notice of the former and an illuminating paper on some phases of modern ocular therapeutics by the latter. Dr. Reber discusses such matters as subconjunctival injections, hormone or organo-therapy, vaccine and serum therapy, and so on. His extensive practical experience and his well-balanced judgment shield him from undue pessimism as well as from excess of enthusiasm. In his own words, he is neither "over-enthusiastic about the qualities of the new, nor iconoclastic regarding the therapeutic ideals of olden days." Other papers which may be mentioned as containing specially helpful material or new facts are those on the Retinal Signs of Arteriosclerosis compared with those due simply to Increased Blood Pressure, by P. C. Bardsley; Three Cases of Fur Infection of the Conjunctiva from Cats, by Arnold Lawson; a New Operation for Ptosis, by Ernest E. Maddox; the Tonometer of Sciötz, by Bernard Cridland. There are other papers of value, and there is a wealth of information in the abstracts derived from ophthalmic literature published elsewhere. An addition is made to the series of British Masters of Ophthalmology in the biography of Benjamin Travers, F.R.S., by Percy Dunn. This paper is illustrated by a portrait.

Military Surgeon.—The June number of this journal gives the first place to a lecture by Colonel T. H. Goodwin, C.M.G., D.S.O., R.A.M.C., on the Collection and Evacuation of Wounded, one of a course of lectures given at the U.S. Army Medical School on the entry of the United States into the war. A paper by Colonel George E. Bushnell, Medical Corps, U.S. Army, on the Diagnosis of Tuberculosis in the Army, dwells on the importance of accurate diagnosis at the present time in the United States when civilian examiners, accustomed to accept as true the statements of patients, have to decide the degree of health of three classes of men: (1) those who suspect they are tuberculous, but are anxious to become soldiers; (2) those who are tuberculous but are anxious to join the Army and secure treatment and pension; (3) those who are not tuberculous but are anxious to evade military service and will allege non-existent symptoms and misleading histories. The paper is long and careful. The writer, who is in charge of a large army sanatorium and has been giving special attention to tuberculosis for several years, seems to feel that, so far as reliance can be placed on a single sign, that sign is the râle—a judgment in which he claims to be supported by German experience during the war.—Lieutenant-Colonel E. L. Munson publishes the first part of the history of an epidemic of measles in a division of 14,000 men in Texas. The epidemic arose from the civil population; its outbreak in the army was foreseen and minimised by careful precaution. Much success was attained; greater could have been achieved had the discipline of the army been better, since "discipline is the mainspring behind sanitation." Colonel Munson was guided in his precautions by his conviction that measles is incorrectly classed as an eruptive fever, whereas it is really a respiratory disease with a rash as a sequela, and he very generally succeeded in isolating patients before the rash appeared. 11,000 well-disciplined and obedient troops showed 105 cases (about 10 per 1000); the other 2400 had 339 cases (about 140 per 1000). To put the same thing in another way, the less well-disciplined troops, had they had the same "luck" as their brethren, should have escaped with 22 cases, but they got 339; while the well-disciplined troops, who might have had some 1500 cases, as compensation for their self-submission to discipline, got off with 105 cases. Their obedience to discipline saved nearly 1500 men from disease and certain of them, no doubt, from death. Other papers evidence the increasing respect for sanitary precautions in the minds of military administrators in the United States, and we note that the time of medical officers is being more and more saved by the assignment to them individually of clerks to do the paper work—in recruiting duty, for example. Attention is prominently drawn to the happy result of the preparedness campaign amongst the medical profession in the United States in recent years. The medical profession there has been doing while others have been talking, and now they are in consequence "first at the front," and were ready to take over, and did actually take over, the management of certain hospitals in France as soon as war was declared—a fact which does them much credit.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The seventy-sixth annual meeting of the association will be held on Wednesday, July 25th, at 11, Chandos-street, Cavendish-square, London, W., at 2.45 P.M., Lieutenant-Colonel David G. Thomson, R.A.M.C., presiding. The Educational and Parliamentary committees of the society and the Council will meet on the same day. The following have been recommended for the Research Committee by the Nominations Committee and have been approved by the Council:—T. Stewart Adair, J. Shaw Bolton, J. Chambers, M. A. Collins (*ex-officio*), H. Devine, T. Drapes, E. Goodall, John Keay, J. R. Lord, H. Hayes Newington, David Orr, Ford Robertson, R. G. Rows, R. Percy Smith, R. H. Steen, D. G. Thomson (*ex-officio*), W. J. Tulloch. A paper on Madness and Unsoundness of Mind, by Dr. Mercier, will, in the unavoidable absence of the writer, be read by Sir Bryan Donkin.

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Extract from Proceedings of the Royal Society of Medicine, February, 1913.

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THE LANCET.

LONDON: SATURDAY, JULY 21, 1917.

In the Interest of the War Cripple.

THE number of permanent war cripples was recently estimated by a public servant at 200,000, and their care has entered upon a new phase with the dissolution of the Central War Pensions Statutory Committee and the taking over of its work by the Ministry of Pensions. The country has been divided up into areas for purposes of collective administration and, as usual, Lancashire is well forward with a scheme, which we summarise on p. 99, for a Central Bureau for organising the work of rehabilitation and re-education of the discharged cripple. It is still not clear—perhaps it never will be—how the Ministry of Pensions and the War Office propose to share their various obligations, but the Paris Conference indicated definitely and authoritatively what those obligations are likely to be, and we have now received from our Paris Correspondent the full text of the resolutions passed by this Conference in plenary session, more than 100 in number. The first group of these deals with the restoration of function and the essential recommendations can be summarised as follows: The earlier evacuation of the wounded man into an institute of physio-therapy; the provision of a sufficient number of well-equipped institutes with competent trained personnel; the attachment of an orthopædic surgeon to each field ambulance; the earliest possible application of medical gymnastics. These are the things placed in the forefront of desirability. And it is on lines such as these that permanent impairment of function will be reduced to a minimum by appropriate anticipatory treatment. The remaining resolutions deal more especially with the treatment of any abiding disabilities by re-education, and their wide scope demands close attention. Their purpose—namely, to develop a common policy towards the war cripple among the Allied nations—is worthy of all support.

The possibilities of hope and usefulness opened up to disabled men by the new methods of care and re-education cannot be made too widely known, and we therefore welcome a new and powerful agent in publicity in the shape of a journal, entitled "*Recalled to Life*," edited by Lord CHARNWOOD, of which the first number (June, 1917) has recently appeared. The purpose of this journal is stated to be the diffusion of information among those concerned with the welfare of disabled sailors and soldiers, and not less among the men themselves, concerning the means by which they may be restored. This end will be furthered by a lucid summary of the Treatment of the Disabled from the pen of Sir ALFRED KEOGH, Director-General of the Army Medical Service, prepared for the Anglo-Belgian Committee, and reprinted in this first number of *Recalled to Life*. After an informing historical introduction, Sir ALFRED KEOGH sketches in stages the history of the sick or wounded man who has been declared to be unfit for further military service, going on to deal in detail with curative workshops and with the special problems of the blind and deaf. Accurate knowledge will undoubtedly be the best means of correcting any misconceptions which exist in the minds of the disabled or partially disabled sailors or soldiers with regard to their training. The introduction to the journal records the persistence of the curious belief among the men, prevalent especially in France, that the disablement pension will be taken away from them in proportion to their return to industrial efficiency. Even in Germany this appears not to be the case, and in this country a pension once awarded can never be taken away or diminished. The only fact to be determined on pension revision is whether physical disability has been reduced by treatment; the question of earning capacity does not arise. This is a message which the medical profession should convey clearly to their charges.

Not only can the pension not be taken away, but the disabled man cannot be compelled by the State to learn the trade or to follow the pursuit which will restore him to his highest possible degree of vitality. Only moral suasion can be used for his betterment, and the conviction brought home to the disabled sailor or soldier that he is not less of a man, but more of a man, than he was before the war, unless he decides otherwise himself. Colonel Sir ROBERT JONES, Military Inspector of Orthopædics, who contributes an article in *Recalled to Life* on Orthopædic Surgery and the War, lays great stress on the effect of the curative workshop on the wounded man's mental outlook. In an atmosphere of work, he says, the man who has lost in hospital much of his spirit and initiative soon recovers some hold on himself, ceasing to think so much of himself as a maimed man, but rather of what he will be able to do in the future. That this spirit is not necessarily lost in hospital is testified to by an admirable special number of the *Gazette* of the 3rd London General Hospital, entitled "Happy—though Wounded!" edited by Lieutenant-Corporal WARD MUIR, R.A.M.C., and brimful of humour. The Editor tells us that one of the most amusing articles was penned by a sergeant just before undergoing an operation which he knew might be fatal. This is typical of the spirit which is common to all the fighting forces, and is the material on which medical care and re-education will not be brought to bear in vain. It is the duty of the country to reward this gallant spirit by striving in every way to help in the rehabilitation of our heroes. The medical profession, which has learned vast new lessons in the course of the war, is restoring to our population thousands who, a generation ago, must have been doomed to hopeless, helpless crippledom; adequate organisation for giving to these men the chance of using their recovered faculties must be forthcoming.

The Medical Recruiting Boards.

WE have published from week to week the evidence given before the Select Committee of the House of Commons which is holding an inquiry into the working of the Military Service (Review of Exceptions) Act, an inquiry which has largely become an examination of the methods pursued by medical boards towards recruits. Among the most valuable evidence given must be accounted that of Colonel Sir JOHN BLAND-SUTTON as to the work of the Special Medical Board, whose function it is to examine cases where differences of opinion have existed between medical recruiting boards on the one hand and private medical advisers of the recruit on the other. The points of view being largely if not wholly different, it is not surprising that the verdicts should not always agree. Speaking generally, Sir JOHN BLAND-SUTTON considered that the proportion of cases in which classifications had to be lowered by the Special Medical Board was too large, which certainly points to over-ruling by the military boards of the opinion of private practitioners. This is, though put in more reasonable form, the opinion which has been widely expressed by the public, for many of the indignant complaints to Members of Parliament, specimens of which have been ventilated in debates, show that the decisions of certain of the medical boards have been formed too hurriedly, although free from the peremptory callousness or widespread ignorance which some have imagined to exist. That the official desire to secure, at any rate for garrison duty abroad, many men who were obviously not of sufficiently good physique for general service has had fuller interpretation than was safe will be admitted by all, but whether this is a fair estimate of the amount of mischief done we doubt. As far as possible, precautions will be taken against the recurrence of abuses, while the constitution of the boards is now under official consideration.

An extraordinary estimate of the value of medical boards is suggested by the military attitude. Evidence has been given, and documents have been produced, which go far to suggest that in the eyes of the military authorities classification is of no particular service, for everybody has his uses of some sort or another in the Army, while classification can be readjusted, they believe with safety, to meet all emergencies. That is the curious position which seems to have been reached, and some military medical officials would readily find that the duty of a medical board is to interpret the view of the War Office that every man has a value in the Army, now that every form of civilian employment has its analogue with the colours. The broad acceptance of this view would be to reduce medical examination to an empty formula. At all events, the examination would merely give opportunity for the registering of a medical opinion whether an individual man could do better work, either of his own special sort or other sort, in a uniform and under Army regulations, or under civilian conditions which are now so much modified by military exigencies. That national service should be rendered is the view of us all, but when we find the sentiment growing up that, short of the grossest disabilities, such service can be rendered by men with real physical defects, we are bound to protest that extra risks will be constantly incurred both by the military employer and the militarily employed if this sentiment is allowed full sway. We disagree with the view that there is no difference between the strain of work done under private conditions and the same or similar work done in accordance with official routine; in private employment there is a flexibility of conditions that may be of the greatest benefit to the seriously unsound; and in keeping such persons out of military employ the medical boards should be of great service, though their more urgent duty is to see that the call to arms is fairly obeyed by the nation as a whole.

There is no doubt that the medical boards in some commands have tended to be better than those in others, and the discrepancies that have appeared in the numbers of rejections show that varying standards have been used; so that it is not surprising that considerable difference of opinion as to what generally takes place at the tribunals has been expressed before the Parliamentary Commission. It did not emerge with any great clearness from the statement of various witnesses as to how far it was the rule for the actions of the boards to be dictated by the chairman. That this usually happens has been strenuously denied both officially and by individual members of these boards, yet it seems to us probable that the chairman generally has had more voice than any member. It is difficult to see how it could have been otherwise, for a medical board being a form of committee, the chairman is certain to possess considerable influence over its members. Unfortunately it seems that on some of the medical boards the chairman has employed that influence purely in military directions, and it is for this reason that we welcome the fact that the constitution of the boards, although their work has of late much improved, is marked for considerable reform. The personnel of many of the boards will be reviewed especially with a view to a proper selection of local medical men for membership of the boards. We regard the frank nature of the evidence given before the Select Committee as of good omen, although its nature has been somewhat disquieting. The public, as well as the medical profession, have been able to get a well-balanced idea of the situation, and that is worth having. This war is being slowly won by the determination of the country to face the inevitable and innumerable hardships that must be suffered by the people. When there is comprehension, quickly or slowly confidence is restored, for events assume their right proportion, and the remedy for errors can be directed by deliberate reason.

Annotations.

"Ne quid nimis."

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

THERE will be found in our advertisement columns the first list of the donations received for the War Emergency Fund of the Royal Medical Benevolent Fund. It is an imposing list and a practical proof of the ready generosity of the medical profession towards their fellows. We regard it as a promise for a creditable total when the Fund comes to be closed; but we must remind our readers that at present the sum obtained is quite inadequate for the purpose which the founders of the Fund have placed before the medical profession, and through them before the public. It is now nearly a year since an appeal was made by the office-bearers of the Royal Medical Benevolent Fund for support to a special emergency fund to assist medical men in temporary difficulty in consequence of having joined the Army Medical Service. A ready response was given to this appeal, enabling the Fund to deal with a number of urgent cases where help was needed, and to render in some of them more substantial assistance. By coöperating with other benevolent societies, such as the Officers' Families Fund and the Professional Classes War Relief Council, any possible overlapping of effort has been avoided. As time goes on the need has, unfortunately, become greater, and in a letter from the President, Treasurer, and Secretary of the Royal Medical Benevolent Fund, which appeared in THE LANCET on June 16th, an appeal was made for a much larger sum than was obtained last year. The letter called attention to the following obvious facts. Many members of our profession, in consequence of having joined the Army Medical Service, find themselves in temporary difficulties. Many medical men when called up had to leave on very short notice, without time to make adequate provision for the carrying-on of their practices during their absence. They have had severe losses in income even when supplemented by Army pay, while heavy expenses, such as rent, insurance, taxes, family maintenance, and education, could not be reduced. To meet these needs, which it is hoped will in many cases be only temporary, the War Emergency Fund was established. To be effective, said the letter from Dr. Samuel West, Colonel Charters Symonds, and Major Newton Pitt, the grants must be made on a liberal scale, and the fund from which they are to be drawn must be a large one. The sum obtained last year was about £4000. This is quite inadequate, as at least £25,000 will be required, even if a small proportion of those requiring assistance is to be helped. From the wealthier members of the medical profession, it is hoped, substantial sums will be received, but everyone will feel it a duty which he owes to his less prosperous colleagues to give the most liberal donation he can afford. The sum mentioned should be forthcoming, whether from within or without the profession. The demands made on the medical man at the present time are searching and imperious; he is recognised as being more essential than ever to the community, and it is only fair that his work should not be hampered by mental anxiety for his own financial position, or that of his family if he is killed or disabled. The appeal is not, and ought not to be, restricted to the medical profession, and this is the view which any medical man who is in touch with influential patients might well bring before them. It should be added that the War Emergency Fund is a special department of the Royal Medical Benevolent Fund. It is kept separate and distinct from the ordinary operations of the general fund and is under the management of a committee specially appointed for the purpose. Communications should be addressed to the Honorary Secretary, War Emergency Fund (Major G. Newton Pitt), 11, Chandos-street, Cavendish-square, W. 1, to whom cheques should be made payable.

FARM COLONIES FOR THE TUBERCULOUS.

THE spes phthisica, with which the tuberculous patient is often unjustly credited, springs eternal in the breast of those who make long plans for his recovery undaunted by the discouragements which dog the path of men of shorter vision. The well-ordered daily discipline first put into practice by Brehmer, of Görbersdorf; the re-discovery of the value of fresh air in season and out of season by Walther, of Nordrach; the system of graduated and progressive labour of which we owe the beginnings to Dr. M. S. Paterson, among others—all these still retain the confidence of the far-seeing tuberculosis expert who has not been misled into attaching undue importance to some particular phase of treatment which may at the time have captured the popular imagination. There are those who would scrap the whole of our present sanatorium system of tuberculosis because a weaver or a coal-miner after three or four months of such treatment frequently relapses upon returning to his previous conditions of life. Not so the prophet who is also the practical administrator. On the experience and lessons of the past he builds his superstructure of developing ideas. In an address commending the farm colony to the National Association for the Prevention of Consumption, at its recent annual meeting, as the most hopeful solution of the problems of tuberculosis administration, Lieutenant-Colonel Sims Woodhead was careful to describe his scheme as one link in a chain, many of whose other elements had been previously forged. His general conception of the farm colony is a comprehensive one, requiring essentially a large tract of land given over to various forms of profitable cultivation, including a generous plan of allotment for intensive culture. Colonel Woodhead regards the teaching of minor handicraft as an essential part of the scheme, in order to fit the recovering patient for emigration to one of the colonies in which he would then start with the means of livelihood. On the plan already adopted in Norway and Italy he places in the colony a "fever rest-house," combining rigid open-air treatment with the comfort of a hospital for the febrile interludes of the chronic consumptive, using it also for the old stagers who are thus deprived of the sense of being shut up in a home for the moribund. The Cambridge After-Care Association is fortunate in having such a model labour colony already in working, and in having wrested from the Approved Societies a concession in regard to sickness benefit to which we have more than once called attention, and which is being tried there with a view of introduction on a larger scale elsewhere if successful. A happy sequel to the address was given by Sir A. Griffith-Boscawen's assurance on behalf of the Ministry

of Pensions that abundant funds would be available for the re-education for industrial life of discharged tuberculous soldiers in such farm colonies, if the Ministry became satisfied that the farm colony was the best method of dealing with them. Lord Glenconner pressed upon the National Association the desirability of running for themselves a small model farm as an object-lesson of what such a curative institution should be.

THE RÔLE OF OPHTHALMOLOGY IN THE STATE.

AN editorial article in the July number of the *British Journal of Ophthalmology* suggests the advisability of a closer contact between ophthalmology and the wider interests of life. Those who devote their careers to it have tended to regard ophthalmology as a preserve to be jealously guarded, where trespassers will be prosecuted; they themselves seldom invade neighbouring territories. Both invader and invaded would, he thinks, be all the better for a freer intercourse. The most comprehensive problem with which the ophthalmologist has to deal is that of natural and artificial lighting in domestic, public, and industrial activities, but it has been left for illuminating engineers to invite ophthalmologists to show their interest in it. Lighting problems teem with difficulties which can be satisfactorily overcome only with the coöperation of properly equipped ophthalmologists. They can also help to solve the numerous questions relating to colour—colour matching by artificial light, the best colours for signal lamps, and so on—all of which involve a knowledge of physiological processes and colour vision. Pathological problems also await solution. Some years ago the Royal Society undertook, at the request of the Government, to investigate the cause and possibility of prevention of glass workers' cataract. These researches extended our knowledge of the physiological and pathological action of heat, light, and ultra-violet rays upon the various structures of the eye, and led directly to the synthetic preparation of glasses of various absorptive properties by Sir William Crookes. Years ago the War Office approached the Ophthalmological Society on the subject of tests of visual acuity for officers of the Army. What is the minimum visual acuity necessary for an airman, an artillery officer, an infantry officer, a private, a munition worker, and others? What guide does a standard in terms of Snellen's test types bear to the actual requirements of these men in their various duties? The article concludes that these and innumerable other such questions await an answer which can only be given by expert ophthalmologists, and then only after much travail of body and mind. It is futile to wait for the authorities to ask these questions. Reform can only come by the spontaneous effort of the ophthalmologist himself.

ANKYLOSTOMIASIS IN SOUTHERN INDIA.

LARGELY in response to representations made by the International Health Commission of the Rockfeller Institute, the Indian Research Fund Association are at present devoting a considerable amount of attention to the subject of ankylostomiasis in India, and two detailed investigations have already been made. The first of these inquiries was carried out by Lieutenant-Colonel Clayton Lane, I.M.S., among the coolies employed in the tea-gardens of the Darjeeling district, Assam, and his report was published in the *Indian Journal of Medical Research* (vol. iv., No. 3), to which we directed the attention of our readers in THE LANCET of May 19th. The second investigation was undertaken in the Nagapatam district of the Madras Presidency by Dr. K. S. Mhaskar, whose inquiry was chiefly made respecting the presence of hookworm infection among the coolies collected at the emigration depôt at Nagapatam; his report is now published in the last issued number of the *Indian Journal of Medical Research* (vol. iv., No. 4). The procedure he followed was somewhat similar to that employed by Colonel Clayton Lane. In addition to examining the coolies collected at the emigration depôt, he examined also hospital patients, school children, and other persons in the town of Nagapatam. The native portion of this town differs but little in character from an Indian village, none of the inhabitants, even those who are well-to-do, showing any inclination to improve the sanitary state of their surroundings. Dr. Mhaskar, in this connexion, observes that in this part of India many of the towns are in fact little more than collections of villages "deprived of the amenities of village life." He adds that the sanitary index of Nagapatam, so far as latrines and excrement disposal are concerned, is "zero." There is an almost universal practice among the male inhabitants of the small towns and villages in this locality to go outside to any unoccupied piece of land to defæcate; women and children use for the same purpose the backyards, or a small enclosure set apart, open to wind and rain, and accessible to fowls and pigs, which scatter the excrement over the surface of the ground where it cannot fail to be trodden upon. It is noteworthy that persons who wear shoes are found, on the whole, less infected by hookworms than those who go about barefoot. In Nagapatam town 91 per cent. of the stools examined contained ova of the ankylostome worm. There is no reason to suppose that Nagapatam is either better or worse in this respect than other towns and adjacent districts in Southern India. In 67 samples of children's stools obtained from schools in Nagapatam hookworm ova were found to be present in all but one. As regards the coolies at the emigration depôt they are collected from 13 districts and 4 native States of the Madras Presidency, and 98 per cent. of them were found to harbour ankylostome worms. The physical condition of these coolies, who were more or less a selected class, demonstrates that hookworm infection is not incompatible with apparent good health. It would seem from Dr. Mhaskar's investigations that ankylostomiasis is endemic in this part of India and that it is far more prevalent in the Madras Presidency than the published hospital and dispensary returns would appear to indicate. The prevailing variety of hookworm found in this part of India is, as in Assam, *Necator americanus*, although occasionally *Ankylostoma duodenale* is also discovered.

Surgeon-General Sir George H. Makins, K.C.M.G., C.B., surgeon to St. Thomas's Hospital, has been elected President of the Royal College of Surgeons of England.

THERE appeared in certain journals about a fortnight ago a letter from Sir Victor Horsley to Lieutenant-Colonel R. M. Carter. The letter was a strictly private one, but its contents were disclosed at the recent Government inquiry into Mesopotamian affairs. Neither the original document nor a copy of it was sent to any journal for publication, while the version which has appeared is incorrect.

THE PARIS CONFERENCE ON THE WAR CRIPPLE.

IN THE LANCET of May 19th we gave a report of the several sections of the Conférence Interalliée pour l'Étude de la Rééducation Professionnelle et des Questions qui intéressent les Invalides de la Guerre, which was held in Paris from May 8th–12th. On the penultimate day of the session the resolutions on which the sections of the Conference had agreed separately were reviewed in a combined sitting. The text of these resolutions has now been issued, and the following is a deliberately literal translation of them :—

Functional Restoration and Medical G mnastics.

1. To instruct the surgeons to evacuate much sooner the wounded into the institutes of physiotherapy, without awaiting the "irremediable" cicatrisation of the lesions.

2. To create well-equipped surgical services in the institutes of physiotherapy, so as to permit the surgeons at the front to send the wounded there promptly.

3. To place a competent medical physiotherapeutist as consultant in the sanitary formations at the front.

4. Medical gymnastics should only be practised by a competent personnel (doctors, medical gymnasts, medical students, and so on).

5. To apply medical gymnastics as soon as possible to the wounded. To place some medical gymnasts in the large surgical hospitals at the front, where they will render more service than mere mechanotherapy.

6. To admit in the institutes of mechanotherapy as assistants or auxiliaries only competent persons acquainted with the principles and the practice of rational physical re-education.

7. Pedagogic gymnastics or collective motor re-education should be directed by teachers of gymnastics instructed and closely supervised by a medical physiotherapeutist.

8. To provide in all the countries for the creation of centres of university instruction in medical gymnastics.

Functional Restoration by Work.

9. The schools of functional restoration shall be placed under the sole direction of the Service de Santé.

10. Physical re-education (whether massage, gymnastics, mechanotherapy, manual work) should be confided solely to competent persons, and should not be confounded with occupational re-education, which applies to the invalided only, and not to the wounded before being invalided.

11. The work prescribed as adjuvant to physiotherapeutic treatment should be obligatory in the institutes of physiotherapy.

12. Treatment by agricultural work, which is the most frequent treatment, owing to the large number of wounded agriculturists and like workers, cannot be organised according to the same formula in diverse regions; the greatest attention should be paid in this organisation to the local modes of cultivation. The mode of cultivation regulates, in effect, the quality and the number of workers utilisable in a given area. Any organisation which does not take into account these regional considerations is doomed to most regrettable non-success, alike from the point of view of the cure of the wounded and of the work furnished to the nation.

13. Occupational work can be considered as an adjuvant of physiotherapeutic treatment, but on the express condition that it be in each case chosen by the doctor and that its execution be supervised as closely as possible by him.

14. That the invalided man submitted to a medical treatment in a hospital be admitted into a workshop of occupational re-education only on condition of being able to dispose of a sufficient number of hours to learn or relearn an occupation with utility. He should, it must be understood, present himself furnished with the medical authorisation.

Prosthesis and Mechanical Adjuvants of the Re-education.

15. It is advisable to encourage the scientific study of the prosthesis of limbs.

16. It is advisable systematically to forbid the employment of crutches in the treatment of amputations of the inferior limb.

17. Functional apparatus of prosthesis, osteo-articular and musculo-nervous, should be delivered only after minute examination, clinical, electric, and ergographic, made by competent doctors. For this there are several reasons: first, some cripples are insistent in asking for apparatus of which they have no need in order to take up again their work. Orthopædists have a tendency to give prostheses which often go counter to the end in view. In short, apparatus badly constructed, far from aiding the wounded, are injurious and hinder occupational re-education.

18. The prostheses of work, in regard to the arm or forearm after amputation, should satisfy these prime conditions: they should be simple, strong though light, easy to repair. Also well applied, making so to say one with the stump. They should be for the amputated, in the course of work, not an object of trouble or fatigue, but a precious auxiliary.

19. All our efforts should tend to perfect the mechanical helps to re-apprenticeship, of which some do not yet respond to the end sought. New advances will certainly soon see the light of day and we shall put all the wounded, to whom we have restored the inclination to work, in a position to earn a wage assuring a sufficiency for them and their family. So shall we contribute to the economic renewal of life.

20. We think that there will be occasion to adapt almost for each occupation a special working hand provided with the necessary tools. In a word, it will be advisable to individualise the hands of work.

21. On account of the interest existing in the perfecting of the apparatus of mechanical orthopædics and of the aids in re-apprenticeship, and in order to permit the grouping and utilisation of the projects of study, it is desirable that an organisation of researches be instituted in each allied country. In order to bring together the necessary experts it would be desirable for it to consist of medical specialists, engineers, technicians, and mutilated fitted with apparatus.

22. An Interallied Commission should without delay be constituted to examine all that relates to prosthesis. In this commission all the experts—i.e., surgeons, orthopædic surgeons, technicians, and, in a consultative capacity, manufacturers—should find a place.

Pensions and Gratuities.

23. That the laws on military pensions be revised, taking into account not only the physical incapacity of the invalided man but the number of children, the family charges, and the parents.

24. That particular cases should be made the object of special study, so that the injury caused may be repaired with proper regard for the previous situation and the possible situation depending on the invalidity.

Occupational Guidance.

25. That civil technical advisers be appointed at once, with the mission of giving to invalided soldiers, during their medical treatment and before their occupational re-education or their discharge, advice on their future—i.e., on the advantages presented, according to the particular case, in persevering in former work or choosing a new kind of work, and, if so, what kind. The intimate collaboration of the doctors and the occupational guides is indispensable in realising a complete re-education. It is also indispensable for guiding the maimed man and for directing him from the beginning of his re-education. But this guidance should never be forced, the good will of the subject being an essential factor for success. The re-education should follow without interruption the medical treatment, and even overlap it.

26. In view of his vocational guidance, the man will receive the advice of experts—medical, pedagogic, technical, and social. The wounded will be fully interrogated on their knowledge, previous occupation, tastes and aptitudes, their family responsibilities, eventual projects for the future, and their economic position. The man, after having visited various workshops to fix his ideas, will choose himself his new vocation. He will, in case of need, be guided by his advisers, notably by the medical man, who will judge if the exercise of the chosen work is compatible with the physical state of the subject.

27. The advisers will endeavour to interest each man in his new occupation by showing him in a concrete manner the possibility of establishing himself in a certain place and the hopes of success. The man, having definitely decided, will be admitted into the chosen workshop. If after a short period of trial he shows the desired aptitude he will be maintained there. Without that he will again appear before his advisers.

28. The advisers will be inspired, as far as possible, by the following principles. It is necessary, unless contrary to the interest of the cripple, to re-educate him in his former work or in a connected occupation. As far as possible the man should be returned to his previous work, notably as to agriculture, and if possible in a superior technical position. But only those cripples should be directed towards non-manual occupations who are educated and have shown sufficient intellectual aptitude in a preliminary examination. It is necessary to make an artisan rather than a factory worker, not to direct men towards encumbered occupations, but towards the vocations where workers are rarest.

29. It is proper to keep, as far as possible, war invalids in their previous occupational environment.

30. It is proper to keep the invalided men, in each case where possible, in the region where they resided before the war.

31. The crippled should be guided in choice of occupation by the extent of openings and the facility of obtaining situations.

32. That for the inmates of hospitals and absolute invalids there be left certain minor kinds of work which can be occupation, but will never be trades.

33. That the trades destined for the new apprentices be chosen from those which can be exercised profitably in less than a year.

34. That, speaking generally, before seeking for the invalided a new occupation, the most serious efforts be made to furnish the man with all the information calculated to re-adapt him for his former work.

Occupational Re-education.

35. The Conference is of opinion that only obligatory re-education can entirely solve the problem. But considering that this obligation encounters in certain countries resistances difficult to overcome immediately, it expresses the wish that public authorities will promote occupational re-education and the retaking up of work by all appropriate means.

36. All the wounded and unfit, victims of the war, unable to be re-educated during the hostilities, have a right to occupational re-education.

37. In absence of obligation competent persons shall be delegated by the State to lead those concerned to make use of this right.

38. During the period of re-education, besides the pension and maintenance allowance, the premiums of apprenticeship will be paid and the remuneration will be continued to those entitled thereto.

39. The State will grant subventions to private institutions which submit to its control and which are organised to assure perfect re-education, and will maintain or create as many schools of re-education as will be necessary.

40. The wounded and maimed who have accepted re-education and who have endeavoured to re-adapt and perfect themselves voluntarily, making a praiseworthy supplementary effort and augmenting their social value, have the right, as officially declared on many occasions by the public authorities, to the whole of their gratuity or pension. It will be desirable, also, to ask the State, so as to encourage re-education, to assist the re-educated wounded and maimed by various advantages, such as money prizes, loans, facilities for starting business, &c., in recognition of their good will and of their desire to take again, in spite of their disability, an active place in society.

41. On account of the constancy of the psychic factor in all the questions inherent in the occupational re-education of the invalids of war, it is necessary in the re-education to unite psychotherapy with physiotherapy, and to recognise the psychotherapeutic importance of occupational work.

42. Occupational re-education should be conceived in a broad, scientific, and humane spirit. It cannot be entrusted to incompetent persons. It comprises general instruction and education, as well as technology. It aims at improving the physical and moral state of the invalid.

43. The re-education of the wounded comprises two periods: (1) The period of functional restoration by work with the object of curing the

wounded, preparing their instruction, and inducing them to work. (2) The period of occupational re-education which begins when the lesions are consolidated, and aims at the moral, intellectual, and manual training of the mutilated. The intellectual training comprises general education and occupational technical instruction, of which the programme can be summarised in the following points: tools, raw materials, processes of manufacture, cost price and sale of manufactured articles, scheme of application. For the manual training it is necessary to banish from the instruction all empirical methods and not to linger over the elementary practices of workshops, but to initiate the apprentices in modern and rapid procedures.

44. In the regions where a local industry exists schools of apprenticeship should be erected destined for the invalids of the district.

45. The schools of occupational re-education should be placed under the chief direction of a committee composed of doctors, representatives of syndicates of workers and employers, technical workers, sociologists, members of various educative bodies, mutilated men who have been re-educated.

46. Each director of a school should make it a point of honour to keep the students with him only so long as is strictly needed for their apprenticeship, and should try, as soon as this is sufficient, to return his pupils to normal life by finding them places in their new work.

47. It is desirable that periodical reunions should permit, in each region, a regular exchange of views between the chief doctor of the centre of appliances and of re-education of the region and the directors of the schools of re-education, public and private, so as to be able to co-ordinate their efforts with the view of directing from the outset the mutilated man in the occupation best adapted to his lesion and to his former work.

48. That the competent regional organisations collect, for the use of the invalids already discharged, information indicating the workers wanted in each region.

49. That the results of the statistical inquiries of the Ministries of Labour, relating to the workers required, be rapidly communicated to the direction of the various schools of occupational re-education.

50. (*a*) That the heads of industry, of trades, of employment, collaborating with, in case of need, competent persons such as doctors, psychologists, technicians, and so on, be invited to define, with all desirable precision, the aptitudes particularly required in the various orders of work in their enterprises (specialisation, synergies, strength, address, frequency and rapidity of movements, sensorial aptitudes, intellectual faculties, &c.) That they be invited also to describe the nature of the preponderant fatigue or of the associated fatigues (muscular, nervous, sensorial, intellectual) caused by the various forms of work of their employees. (*b*) That the documents thus collected be centralised and classified, with the view of forming a series of monographs on trades, occupations, and employments, enabling individuals to turn to the careers according to their health and aptitudes. (*c*) That besides the medical card index there be established (according to the methods of physiology and psychology) a card index of the aptitudes, motor, sensorial, and intellectual, of the emotivity, habitudes and tastes, of the degree of instruction, working capacities, of the re-educable, and these cards could be communicated (without indication, at first, of the names of the subjects) to the heads of businesses for the recruitment of their personnel.

51. That the mutilated, amputated or not, if he has good will, is assured of the zealous help of the head of the workshop and of the medical specialist. This triple collaboration will contribute, in many cases, to the creation of appropriate tools or to the modification of machine tools, susceptible, in both cases, of realising the maximum of industrial output.

52. The schools of re-education, speaking generally, should be organised on a large scale, with a great number of pupils, able to choose between a variety of occupations or of kinds of instruction. One can thus distribute the pupils in a rational way, have good masters and good heads of workshops, with all the necessary equipment for instruction and for the running of the workshops. Nevertheless, it should not be overlooked that small schools have their utility in maintaining in their place of origin the invalided who do not desire to go away, and in facilitating apprenticeship in certain special industries.

53. A school of re-education should be as far as possible attached to a large hospital. There will also be centres of neurology, physiotherapy, and apparatus.

54. Commercial and administrative courses will be instituted in each college or each superior occupational school, established near a hospital centre or a centre of discharge, in order that the candidates for this kind of education do not lose the precious time elapsing between the commencement of convalescence and their discharge.

55. That the schools of apprenticeship of wounded soldiers, particularised industries established for instruction in diverse sections of occupations, be not considered by the authorities as works of public charity, but indeed as institutions of technical instruction.

56. After, as during, the war the certificates at the end of the apprenticeship will be given by industrial commissions composed of delegates of employers and of delegates of workers chosen from among the re-educated mutilated.

The Finding of Employment.

57. There is no ground for creating in the industrial establishments for the generality of cases special workshops for men invalided by war.

58. The invalided by war should receive for an equal production a salary equal to that of the sound worker. In any case the pensions allowed by law to the invalided by war cannot be a cause of diminution of the pay which is generally given in the same region, and for the same work, to the sound workers.

59. In a general way the finding of posts for the invalided by war will be confided to the organisations legally charged with the placing of sound workers, and there is no need to separate agriculture from general employment. Where the direct placing is exercised by the occupational schools as concerns their pupils or by the local committees and other bodies as concerns their protégés, these bureaux should be coördinated with the public employment offices, which should be informed regularly of the operations effected. There is advantage in the schools of occupational re-education continuing to place their pupils, but not without having, as a preliminary, consulted the departmental committee of the place of origin of the mutilated, in view of his return there.

60. The public and private employment services should apply to the invalided by war, beyond the general rules of placing of sound workers, rules which are stricter, notably as concerns the steadiness of employment, the conditions of work, and the scale of salary, as well as accessory advantages. There is need to guide the regional placing of the invalided by war by establishing a general list of the trades required by each region.

61. There is obligation for employers to give occupation, whenever it is possible, to the invalided by war.

62. That the formal contracts impose on the administrations a percentage of re-educated or re-adapted mutilated men.

63. That the regulations of the examinations in the public services be revised so as to permit the wounded in war to profit by the advantages which are offered, and that the preparation for these examinations be facilitated for them.

64. (*a*) That the organisation of coöperative societies in production and of agricultural coöperative societies be promoted. (*b*) That motive power and special machines be put at the disposition of the mutilated working at home who express a desire for them. (*c*) That a bank for loans be organised for those who on mobilisation found themselves faced with a situation to restore, whether in regard to a business, a public office, or an agricultural undertaking. (*d*) That the labour market be organised.

65. That the facilities of credit given to agriculturists be extended to the invalided artisans for purchase of tools, and that help be provided to small trading, either by capitalisation of a part of the pension or by special banks.

66. That the Allied Governments study the institution of the Crédit Mobilier (loan society on personal property) for mutilated and discharged men, with a view of permitting the invalided by war, and specially those who have been re-educated, to acquire the instruments of work and the raw material necessary to become small masters.

Agricultural Re-education and Employment.

67. Return to the land appears more and more desirable for most of the war invalids, in particular for all the wounded with nervous affections, even in certain cases for the most infirm of the nervous system.

68. That while fully respecting the liberty of the individual, endeavours should be made to lead back to the land all the agriculturists wounded and mutilated.

69. Men who may be discharged should be dealt with while they are under military control and grouped together; it is inadvisable to wait till the discharged men have returned to civil life and dispersed.

70. That the retaking up of agricultural work be logically presented to the wounded and applied as a complementary form of physical treatment.

71. That the mutilated agriculturists be returned to the land as soon as possible and do not await, inactive, in a medical centre, the settlement of the pension or the organisation.

72. That former agriculturists be directed, only in exceptional cases, towards occupational re-education and when they cannot return to the land.

73. That advantage be taken of their stay of some months in a centre of treatment in their place of origin by renewing their occupational education.

74. That a definite course of instruction, simple and practical, be organised, so as to bring within reach, in the speciality chosen, the knowledge necessary to become an agriculturist capable of developing and of perfecting his knowledge.

75. That the Ministries of Agriculture and all the agricultural authorities organise this course of instruction with the materials at their disposal.

76. That relations be established as intimate as possible between the schools of re-education and the Ministry of Agriculture so as to realise this programme with the briefest delay and in the best national interest.

77. Independently of the special schools devoted exclusively to agricultural re-education it would be desirable to see instituted, whenever possible, in the gardens surrounding the occupational schools, a practical course of instruction in intensive cultivation, arboriculture, and small holdings for the use of the artisans following their trade courses, as well as lectures at which the courses, given outside the hours of occupational instruction, would impart indispensable theoretic and scientific knowledge.

78. That there be organised, in support of agricultural re-education, an active propaganda, not only among the wounded, but especially among the institutions of re-education and placing of the mutilated, municipalities and teachers of rural communes, so that conclusive observations on the re-educated mutilated may be recorded, and, if possible, illustrated by photographs. The danger will be shown of the immediate placing of agriculturists in public or private employment and the capital interest there is, as much from the social as the individual point of view, in leaving agriculturists on the land and in perfecting their agricultural education.

79. That in order to maintain the peasant on the land and to cause the mutilated to return there, the owners be invited to interest themselves more in their properties, and after advice from competent persons to introduce on their farms the improvements indispensable to ensure a good and remunerative cultivation.

80. That the workers occupied in agriculture benefit on the same grounds as the workers employed in industries by the advantages accorded by legislation relative to industrial accidents.

81. That as rapidly as possible measures be taken to permit the mutilated to acquire land. And that notably the right be given to a military pensioner to apply a part of his pension to form a capital sum devoted, under the supervision of a competent authority, to the acquisition of land and agricultural equipment.

82. That the Ministries of Agriculture organise rural centres of instruction in local small industries, and also create associations which will assure to the workers the normal wages accepted by the Ministries of Labour.

83. That the public services be reserved only for the mutilated incapable of taking up again usefully agricultural work: amputated or paralysed in two members, upper or lower, blind, &c.

Permanent Protection.

84. That societies, assisted and instructed by the central organisations of propaganda and documentation, cöoperate with the State, the Societies of Mutual Aid, and the occupational groupings for the permanent protection of the invalided by war, on all occasions where this protection should be exercised, from the day of receipt of wound.

85. That the Allied nations, as soon as possible, enter into conventions tending to fix the régime applying to war invalids, so that the latter can find protection and assistance, on the same ground as the indigenous, in any foreign country where they exercise, even temporarily, their callings.

86. To assure complete and permanent assistance for the absolute invalids.

The Care of the Blinded.

87. (a) *Pre-re-education.*—The creation of small workshops near the ophthalmological centres and the ophthalmological services of the hospitals should be rendered obligatory. It will not be enough in these small workshops to commence, as soon as the state of the wounded man permits, the occupational re-education; the principal task is that of facilitating for the blinded man the passage from his previous life to his new condition. We must shield him from all maladroit and depressing pity. We must take care that the revelation of his blindness be made with all the precautions that are required by his sensibility and physical state. We must seek to maintain and develop his relations with his family, either in facilitating their visits or in giving the blinded man the greatest facilities to be with his relatives as much, be it understood, as his state and the needs of medical treatment will permit. A beginning will be made by teaching him Braille. He must be given the means of entering into relation with the world as much by the processes of writing in black as by the method of typhlography Cantonnet which deserves to be adopted. If he has become another man he is not necessarily a worse man, and he must understand that he will be able to assure himself, by his work, a new existence in which he will find the means of re-making a new life, worthy, active, and happy. We must take care that he does not allow himself to be drawn into a marriage towards which his fiancée would be urged only by pity or interest. In short, we must have constantly in mind that the duty of the educator is to concern himself much less with procuring an immediate satisfaction than with assuring the future of the injured man.

88. (b) *Re-education.*—The blinded, as soon as their state permits, will be directed to the school of re-education nearest their home, and will not, under any pretext, be retained at the ophthalmological centre or service beyond the limits strictly indispensable for the treatment of their wounds. The directors of the schools will apply themselves to following the precepts enunciated above. At the school one will seek for each blinded man instruction in the kinds of work which seem best adapted to his condition, knowledge, and aptitudes. A difference will be made between the town dweller, whose apprenticeship should be pushed to the possible limits of perfection, and the countryman who, living more cheaply and being able to occupy himself with small works of cultivation still open to him, will only have need of adding to his pension the money coming from supplementary work, such as, for example, brush-making, chair-making, basket work, shoe-making, for which he will find clients in his immediate vicinity. The Conference voted the resolution that the "typhlophiles" devote their efforts to searching for lucrative occupations able to be exercised by the blind with a superior education: clerks, students, officiers de carrière, &c. Before the departure of each pupil the school directors will instruct families as to the moral and material aid necessary for the blinded.

89. (c) *Return home.*—The Conference adopts the resolution that the improvement promised in the actual pension of the blinded in war by raising the scales fixed by the law of 1831 should be realised with the briefest delay; that account should be taken of multiple infirmities and family charges, present and to come; that this increase be not paid by the State under the denomination of relief; and that all the wounded, without distinction of grade, should be entitled to benefit in the proportions indicated by the scale of pensions. On leaving the school each blinded man—peasant, workman, clerk, student, and so on—will receive the tools and instruments necessary for the occupation he is capable of exercising. These tools will be adapted to all the men's needs, notably the one-armed blind will be given the special knife of *M. Lotz*. The Conference resolves that the purchase of raw materials and the sale of manufactured products be facilitated to the blinded who have returned home, and in such a way as to avoid all stoppage of work: by the State in giving facilities of transport, in reserving orders for them; by private societies in assuring them in a permanent way the best conditions of purchase of raw material. It is desirable that local protection should be assured in each case by families living in the neighbourhood of the blinded man; such protectors will afford the blinded man moral aid and practical counsel, and will also on certain occasions serve as intermediaries between him and the administrations of the State or private societies.

The Deaf.

90. Lip-reading will be the only mode of re-education useful in deafness, organic, bilateral, and total. The instruction should be given by the teachers of institutions for deaf-mutes, and not by improvised teachers.

91. From the social point of view the auditory re-education with the object of allowing the deaf to utilise their remaining powers of hearing can be employed with this end concurrently with lip-reading.

92. It would be useful to create a "Fraternal Union of the Deaf by War," destined to group them, and to render easier the diverse conditions of their lives.

Sufferers from Lesions of the Nervous Centres.

93. The men gravely disabled owing to lesions of the nervous centres, still having need of attention and medical supervision, cannot be left to themselves or be returned to their families, who are unable to give the careful attention, prolonged and very costly, which is needed. The men should be re-united in special establishments, for their place is no longer either in the surgical wards or the institutions of neurological practice. It is of moment that installations reserved for these men answer not only to all the modern rules of hospital centres, but beyond this be organised with taste and even with daintiness, so that they may feel at ease. It is unnecessary that these men—to whom we owe more because they have suffered more, and are still destined to suffer morally and physically—should for a moment have the impression that they are grouped together in any kind of institution whatever on the ground of being incurable or because they are troublesome elsewhere. These men will be sent to their region of origin, and for this purpose a special service will be created in the chief town of each region or quite near this town, so as to permit frequent visits of their relatives and friends. When these establishments are founded in a town it will be well to find a place in the adjacent country to which the patients can be taken during a part of the fine season. This is what exists for those with lesions of the nervous system grouped at the Hôtel des Invalides at Paris. A single institution in the country in proximity to a great centre would obviously replace with economy the double installation. These men need special care, a particular medical supervision, a specialised medical personnel and nursing staff. The whole future of these patients depends on the attention they receive. In certain cases astonishing improvements can be hoped for with constant care and a functional re-education well conceived. Among these cases are many able to benefit by occupational re-education, either in town or rural pursuits.

94. That assistance be given to the invalided men of much diminished capacity (as those trephined), either in organising special workshops or in finding them employment, thus safeguarding their self-respect.

95. Basing itself on the experience acquired during nearly two years at the school of Ondes and on the results obtained there, the Conference wishes to see the official development of organisations analogous to those of Ondes.

Sufferers from Lesions of the Peripheral Nervous System.

96. In order to reduce the number of invalids owing to lesions of the peripheral nerves, it is desirable that the wounded be submitted, on their admission to a hospital at the front, to examination and treatment by a neurologist. The latter ought to be able to decide as to the opportunity of surgical intervention, to direct this, and all the subsequent treatment, physiotherapeutic, functional and occupational re-education. It is desirable, therefore, that neurologists be attached to the formations at the front. It is indispensable that forms of detailed observations be made out for all cases of wounds of the peripheral nerves.

Sufferers from Definite Mental Troubles.

97. War invalids presenting persistent mental defect should, more than all the other cases—on account, on the one hand, of the difficulty they have in acquiring new notions in regard to work and, on the other hand, owing to the force of the automatism and the experience acquired—be, when they are re-educable, maintained in their former work and replaced, if possible, in their previous surroundings. If this last condition cannot be fulfilled the re-education should be studied and tried in special institutions.

Documentation and Propaganda.

98. That since the question of the disabled by war, their pensions, as well as their occupational re-education, employment, and social protection, is common to all the countries of the Entente; and since it is to the interest of each of these countries to seek solutions which harmonise with the results of experience; and since these results can only be obtained by the organisation of an inter-Allied bureau of documentation on the matter, it is resolved: That in awaiting the creation of such a service by way of accord between the Governments interested, the Direction of the Statistique Générale of France be immediately charged with the collection of documents, with the object of publication, and be instructed to communicate to the Allied States such details on each question as may be asked.

99. That the Franco-Belgian Committee of the Inter-Allied Conference consider, with the least delay, the publication of an inter-Allied periodical review of prosthesis, orthopædy, and all the questions relating to functional and occupational re-education.

100. That an active and coördinated propaganda be organised in each Allied country by pamphlets, lectures, lantern demonstrations, meetings, &c., to make known in all parts of the country the resolutions adopted by the Inter-Allied Conference; to make the war invalids understand the reasons which have determined these resolutions, and the advantages which arise from them for the men and the country; to combat any contrary tendencies and propaganda, open or covert.

101. That, in order to facilitate occupational re-education: (1) The public authorities undertake to bear the cost of this re-education as well as the cost of maintaining the invalided man and his family during the course of re-education. (2) A special propaganda be carried out among the medical men and nurses of hospitals, as well as in the institutions carrying out re-education, with a view of defining the nature of their action in regard to occupational guidance, and of attaining coördination of the programmes in conformity with the resolutions of the Conference, and taking account of the usual openings in each region.

102. That a permanent inter-Allied committee be instituted to maintain the relations created by the Conference between the bodies and the persons who have taken part in its work and to prepare for the subsequent meetings of the Conference.

THE LANCET, VOL. I., 1917: THE INDEX.

OWING to the continued shortage in the paper-supply, the Index and Title-page to the volume of THE LANCET which was completed with the issue of June 30th, 1917, have been printed separately, and copies have been supplied gratis to those subscribers who have, up to July 18th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should be sent in at once.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Advanced Surgical Posts.

FROM the beginning of the war learned societies and Parliamentary Commissions have frequently discussed the best site to select for surgical stations, which should be equipped for urgent operations and as near as possible to the point at which the wounded men are picked up. The advanced aid-post, placed in the front trenches and continually exposed to heavy bombardment, can only be suitable for the first dressing, and wounded men must be evacuated from it as soon as possible to make room for newcomers. The morale of a wounded man cannot fail to suffer from the sense of being still in the midst of the battle although lying helpless on a stretcher. Grave operations, demanding an experienced surgeon, anæsthetist, assistants, and complete equipment, are only practicable in a quieter spot less crowded and less liable to sudden movement due to the fluctuations of the battle. Here are to be found the advanced surgical posts represented by mobile surgical ambulances and by immobile field hospitals set up in deep and spacious dugouts. Inasmuch as enemy bombardment is often carried out from very long distances, and as sanitary formations are always in danger from aeroplanes, it is the covered site which is generally to be preferred so long as the fighting line remains roughly stationary. Experience is now, however, beginning to show that even this solution of the problem is not completely satisfactory. Dr. Hardouin, who communicates his impressions to the Society of Surgery, cites the case of two well-managed surgical posts installed in deep dugouts 1500 metres from the front lines. At one 600 wounded men were received, of whom 23 were retained for treatment. Of the latter 7 succumbed rapidly before operation; 12 cases of hæmorrhage had ligatures applied, and were evacuated the same evening or the next day; 4 patients with abdominal wounds were retained for laparotomy. Of the last all four died, the first three at the post itself, the fourth—evacuated on the third day because bombardment rendered the air unfit to breathe—arrived at the neighbouring ambulance in a serious condition and died next day. The second post gave very similar results. The number of patients retained was greater, but on two occasions the wounded men had to be evacuated hurriedly by order of the military authority, and several died on the following day. Dr. Hardouin draws the conclusion that it is only possible to do really useful surgical work in grave cases in a field hospital situated not less than 5 kilometres from the front line, communicating with the advanced aid-posts by good roads and a well-managed service of transport. The rôle of the advanced aid-posts should be limited to collecting wounded men suffering from severe shock, particularly cases of hæmorrhage.

Prophylaxis against Measles and Scarlet Fever among the Troops.

The great frequency of measles and scarlet fever among the troops and the ease with which they develop into formidable epidemics in the conditions under which soldiers live have inclined several sanitary officers to adopt in the ambulances what is tantamount to Milne's method (painting the throat with 10 per cent. carbolised oil and rubbing the body with eucalyptus oil) in the prophylaxis of these conditions. In January, 1916, M. Lemoine (Médecin-Inspecteur) and M. Devlin (Aide-Major) employed it in certain large industrial districts which were much overcrowded with sick under conditions in which isolation of contagious cases was practically impossible. An ingenious contrivance was adopted. Each patient was enclosed in a muslin sheath hung from a wooden block fastened to the ceiling, the sheath around the head and chest being tucked under the bolster and mattress of the bed to form a kind of simple mosquito-net. The results were excellent and no epidemic occurred. Aide-Major Edgar Leroy adopted later another arrangement. Boxes made in the shape of huge coffins, the sides of which were of gauze stretched on wooden frames, were placed on the beds so as to cover the patient completely. A shutter at the level of the patient's head permitted of the two-hourly painting of the throat prescribed by Milne, and also for feeding. No case of measles or of scarlet fever was transmitted from bed to bed in the wards where these conditions were nursed side by side with the wounded. The only victim of infection was a nurse who dealt almost single-handed with a very large number of cases of scarlet fever. The patients made no complaint of the method and were sheltered from the draughts in the ambulances.

Determination by Staining of the Necrosed Parts of a Wound.

Professor Delbet recently described to the Society of Surgery a method by which the immediate closing of a wound may be safely effected after excision of the necrosed and infected parts. This method, which is now in frequent use by French surgeons, is only safe if all necrosed tissue has been entirely removed. To make this readily possible a colouring agent is employed which permeates the tissues and stains the necrosed parts. M. le Grand has worked out a dye consisting of 40 per cent. formalin to which 10 per cent. of methylene blue is added. By this solution healthy tissues are simply dyed blue, but necrosed parts become so dark as to be almost black, the parts to be excised being thus easily distinguished. The method is particularly valuable in ramified wounds, especially when complicated by fractures with splinters. Employing this method M. le Grand has only had four deaths in 109 cases of immediate suture of wounds thus treated. In 25 out of 26 cases of fracture treated in the same way the wound healed without suppuration.

July 14th.

URBAN VITAL STATISTICS.

(Week ended July 14th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·7, against rates steadily declining from 12·8 to 11·2 per 1000 in the four preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·1, or 1·7 per 1000 above that recorded in the previous week; among the remaining towns the death-rates ranged from 2·3 in Edmonton, 4·7 in Wimbledon, and 5·8 in Swansea, to 18·6 in St. Helens, 19·4 in Norwich, and 21·5 in Bury. The principal epidemic diseases caused 261 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 116 from measles, 61 from infantile diarrhœa, 37 from diphtheria, 36 from whooping-cough, 6 from enteric fever, and 5 from scarlet fever. The deaths from measles were 2 in excess of the number registered in the previous week, and caused the highest annual death-rates of 2·0 in York, 2·3 in Walsall, and 5·5 in West Bromwich. The 634 cases of scarlet fever and 1067 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 8 below and 6 above the numbers remaining at the end of the previous week. Of the 3820 deaths from all causes in the 96 towns 161 resulted from violence. The causes of 34 deaths were uncertified, of which 6 were registered in Birmingham and 3 each in Liverpool and Rotherham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was 13·7, against rates steadily declining from 17·0 to 15·0 per 1000 in the eight preceding weeks. The 257 deaths in Glasgow corresponded to an annual rate of 12·0 per 1000, and included 20 from whooping-cough, 19 from measles, 2 from infantile diarrhœa, and 1 from diphtheria. The 91 deaths in Edinburgh were equal to a rate of 14·3 per 1000, and included 5 from whooping-cough, 2 from measles, and 1 each from diphtheria and infantile diarrhœa.

Irish Towns.—The 115 deaths in Dublin corresponded to an annual rate of 15·0, or 0·2 per 1000 less than that recorded in the previous week, and included 4 each from whooping-cough and infantile diarrhœa. The 111 deaths in Belfast were equal to a rate of 14·7 per 1000, and included 2 from whooping-cough and 1 each from measles and infantile diarrhœa.

LITERARY INTELLIGENCE.—The "Dictionary of National Biography" has been presented to the University of Oxford by the family of the late Mr. George M. Smith, and will in future be published by the Oxford University Press. Mr. Smith undertook this great work at his sole risk and expense in 1882; during 15½ years, 1885–1900, under the editorship of Sir Leslie Stephen and Sir Sidney Lee, the original promise of quarterly publication was faithfully kept; the sixty-third volume which completed the Dictionary was published in 1900, and three volumes of supplement, bringing the record down to the death of Queen Victoria, were published in 1901. In 1908–9 these sixty-six volumes were re-issued in twenty-two volumes, now the current edition. Mr. Smith died in 1901, having brought to triumphant completion without State assistance or subsidy the largest of all national collections of biographies. In 1912 Mrs. George M. Smith, to whom the Dictionary had been bequeathed, published the second supplement of three volumes, containing the lives of all notable persons who died between Jan. 22nd, 1901, and Dec. 31st, 1911. It is intended to commemorate upon the title-pages of all new issues the name of Mr. George M. Smith, the initiator and first proprietor and publisher of the Dictionary.

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH:

THE ACTION OF DIGITALIS IN AURICULAR FIBRILLATION.

To the Editor of THE LANCET.

SIR,—When Sir John Broadbent takes umbrage at my carefully-guarded assumption that he doubts the existence of auricular fibrillation in man, he has but himself to thank. The statement in the last paragraph of his first letter is that he is "unable to accept in its entirety the doctrine of auricular fibrillation." Taken with its context, this statement could have been read in a less general sense, as I pointed out at the time. What Sir John Broadbent meant is not so important as what he conveyed to his readers, and a number of these, to my knowledge, interpreted his statement in the sense against which I directed my preliminary criticisms. I remain of opinion that they were justified in so interpreting it, and that my assumption was perfectly fair to Sir John Broadbent. My first point is gained when he dissociates himself from the wide interpretation; the issue is narrowed in that the existence of auricular fibrillation in man is not now to be questioned. It appears, also, that the conclusion that digitalis slows the ventricle in auricular fibrillation by the mere cutting off of a few impulses ("feeble," or "nervous," or otherwise, as the case may be) is not further to be questioned, and we are left with the third issue—namely, *is this action of digitalis more or less beneficial than a supposed action on the tone of the ventricular muscle?* But if it was his original desire that the discussion should be so limited, he was clearly unjustified in writing as he did. For this third issue is primarily concerned, not with the "doctrine of auricular fibrillation," but with the doctrine of *digitalis action*. Had Sir John Broadbent written "doctrine of digitalis action" he would not have been understood in a different sense, as he inevitably was in the circumstances.

I am quite prepared to accede to Sir John Broadbent's wishes and to neglect all but the third issue, for its discussion will equally well illustrate the divergence in the methods of thought of two schools. And, in parenthesis, I may remark that it is not my object in this correspondence to score a point off Sir John Broadbent, but to bring home to your readers generally the fundamental and important character of this divergence.

On the one hand, there is a body of workers who contend that in cases of auricular fibrillation digitalis exerts a remarkably beneficial action by producing heart-block, thereby showing the action of the ventricle. Upon what evidence does this contention rest? It has not been come to after a few moments of reflection, but by years of strenuous work. In published records *these workers* have shown, not only to their own satisfaction, but to that of other workers in the same field: (1) that the condition they deal with is in reality fibrillation of the auricles; (2) that an accelerated ventricular rate is reduced when digitalis is administered in cases of auricular fibrillation; (3) that any procedure which is known to induce heart-block will slow the ventricles if employed while the auricles are fibrillating; (4) that heart-block is induced by the administration of digitalis. They conclude that digitalis slows the action of the heart in auricular fibrillation by inducing heart-block, and their conclusion is arrived at by logical reasoning and is the inevitable conclusion from the facts. The same workers have shown (5) that hand in hand with the reduction of heart-rate there is a remarkable relief of symptoms. They are taught by physiology that when an accelerated heart-rate is reduced the work of the heart is greatly decreased. They further conclude, therefore, and are upon perfectly safe ground in concluding, that the symptoms are alleviated by the slowing of the ventricle which accompanies the digitalis action. On the other hand, it is held by Sir John Broadbent and those who think as he does that this explanation of the "beneficial action of digitalis in auricular fibrillation" is insufficient, and that "it is the action of digitalis in restoring the tone of the exhausted muscle so that it contracts more powerfully which plays a more important part."

It is necessary to my main object to point out that the new facts to which I have referred above have been elicited solely by members of the first school of thought; they are responsible for the observations which show that digitalis has beneficial effects in auricular fibrillation. It is not from these workers, but from a quarter from which no single new observation bearing upon this phenomenon has come, that a new and unacceptable explanation of it is offered. It is unacceptable because no argument has been put forward which has not already been considered fully by the responsible workers nor any new evidence which conflicts with their original conclusion. The attitude is, as I have said, philosophic, and it is precisely this attitude, and not Sir John Broadbent personally, that I am out to attack; and I attack it because it is sterile. What, then, are the arguments? According to Sir John Broadbent they are fully stated in his first letter. I find in his first letter these arguments:—

1. "Any clinician knows the extraordinarily satisfactory results obtained from the administration of digitalis in cases of heart failure and dropsy associated with mitral incompetence, even when the pulse is quite regular and there is no question of 'auricular fibrillation.'" To this I reply that no clinician, however much he may "know," has as yet shown this to be so. I challenge the production of the published records.

2. Professor Cushny has raised the question of a possible action of digitalis on the muscle of the ventricle. True; and he has dismissed it in the words: "This cannot be answered at present, as we have no means of measuring accurately the contraction of the human heart."

3. It is inferred that there is some mysterious and beneficial action in mitral stenosis *qua* mitral stenosis. This argument Sir John Broadbent accuses me of ignoring. I *have* ignored it; and because the idea, whatever it may be, is not so clearly expressed that I can comprehend it. The fact remains that no series of cases of mitral stenosis in which the rhythm is normal has been placed on record in which strikingly beneficial results have been demonstrated.[1]

And that ends the arguments. There is, first of all, no scientific evidence of a beneficial action in any way comparable to the strikingly beneficial action in fibrillation. There is not a shred of evidence that digitalis increases muscle *tone* in the accepted sense of that term; in fact, it is still questionable if tone, as a separate cardiac function, exists. There is, finally, no acceptable evidence that in man the force of contractions is increased by medicinal doses.

I point to the contrast, the solid and hard-earned substratum of recorded fact on the one hand, the appeal to authority (and often authority misinterpreted) and to questionable hypothesis on the other, and ask: Can I possibly consent to the view that this supposed and unproved action of digitalis upon muscle tone "plays a more important part" than does its proved action in slowing the ventricle? I answer that I prefer, as I believe your readers will prefer, a reasoned statement, each step of which is firmly cemented by original observation which has provided us with much fresh knowledge, to a hastily conceived idea, whose lead its authors have not the confidence or ambition to follow, thus to win for it, if it can be won, the support which alone can render it presentable or acceptable.

I am, Sir, yours faithfully,

Hampstead, July 7th, 1917. THOMAS LEWIS.

[1] I mean by strikingly beneficial results, such as are comparable to those obtained when the auricles are fibrillating.

THE EFFECTS OF SWALLOWING LIQUID CHLOROFORM.

To the Editor of THE LANCET.

SIR,—The inquest upon a soldier at Aldershot reported in this evening's papers (July 12th, 1917) reminds me that on March 14th, 1891, you published Practical Notes on the Administration of Ether and Chloroform, a paper read by me before the West London Medico-Chirurgical Society on Feb. 6th, 1891. In the course of it, referring to the administration of chloroform through a mouth-tube with Junker's inhaler, I said: "Take care that the bottle of the

Junker's apparatus is only one-third filled with chloroform, and that the indiarubber tubes are properly applied to the metal tubes (in the top of the bottle) each to each, or liquid chloroform instead of vapour will be administered. The danger of the accident (and its possible effect) does not require to be pointed out here by me." Care should also be taken to keep the bottle upright or similar effects will arise.

I once had an experience very similar to that recorded in the recent inquest at Aldershot. The Junker apparatus was handed to me by a theatre attendant with the tubes wrongly attached. It resulted in my driving the whole of the chloroform out of the bottle into the naso-pharynx—the tube was passed into the nostril, the operation being the removal of an epithelioma of the lower lip by the late Mr. Keetley. I had already anæsthetised the patient when I changed to the Junker apparatus and had compressed the air-ball two or three times when, the first incision of the V-shaped incision having been made, I noticed a drop of clear liquid fly out of the patient's mouth. I looked at the bottle, saw it was empty, and interrupted the operation to explain what had happened. The patient became cyanosed, the cyanosis rapidly increasing. The patient was laid on the floor and I began artificial respiration, asking for a stomach-pump and galvanic battery. Mr. Keetley at the same time proceeding to perform tracheotomy, and in doing so opened a good-sized thyroid vein from which very dark blood escaped freely. We allowed it to flow—the tracheotomy not being completed as the patient improved—and I believe that especially the bleeding and the use of the stomach-pump saved the man's life.

Altogether the time of the proceedings could not have been many seconds more than a minute. The operation was quickly completed and the patient was sent back to bed. Next morning I went to see how he was. I found him sitting upright in bed, looking happy. I said, "Have you any discomfort in your throat or pain?" and he answered, "None at all."

Now that latter fact was very interesting, in view of the well-known Bartlett case, in which it was argued that had chloroform been administered by the mouth it would have had more or less an escharotic effect. I do not intend to imply that I was a witness in that case. My impression is that it was my experience of the accident that led me to emphasise the necessity of assuring oneself that the tubes of the Junker were in order.—I am, Sir, yours faithfully,

Kensington, W., July 12th, 1917. RICKARD W. LLOYD.

THE TREATMENT OF WAR WOUNDS.

To the Editor of THE LANCET.

SIR,—In your issue of June 23rd Sir Almroth Wright again puts forward his views regarding the treatment of wounds, but does not refer to any criticisms of them. He has, however, given a few more experiments to support his ideas regarding hypertonic saline solutions; so I venture again to point out that he is really trying to demonstrate a thing which is contrary to the Newtonian law—action and reaction are equal and opposite. This being so, there must be explanations of these, as well as of his earlier experiments, which he has failed to see. Let us take, for example, the experiment with agar cylinders. In this, in view of my own experiments, it is difficult for me to believe that he made accurate quantitative estimations, and that his results were really as he assumed them to be, but granting that they were as he describes, would they not merely show that formalin rendered the agar impervious to salt while it remains pervious to water, and that osmosis therefore took place?

Then again, take the series of experiments with siphons. In these surely the true explanation is that because the salt diffused up into the siphon and made the fluid in the limb dipping into the salt heavier than that in the other, therefore a flow was established towards the salt.

Many other points call for comment and criticism, especially those relating to the antiseptic action of Dakin's solution and to "digestive cleansing," but it would hardly be worth while dealing with these so long as the criticisms regarding normal and hypertonic saline solutions remain unanswered.—I am, Sir, yours faithfully,

WM. PARRY MORGAN, M.D. Lond.,
Captain, R.A.M.C.

The Lord Derby War Hospital, Warrington, June 28th, 1917.

PURULENT BRONCHITIS.

To the Editor of THE LANCET.

SIR,—I shall be very grateful if you can spare a little of your valuable space to enable me to refer to the article "Purulent Bronchitis," by Lieutenant J. A. B. Hammond, Captain W. Rolland, and Lieutenant T. H. G. Shore in THE LANCET of July 14th.

During the past winter a large number of cases of bronchitis were admitted to the Connaught Hospital, Aldershot. Amongst such cases a very large proportion were of a distinctive type. It is unnecessary for me to dwell in detail upon the special features they presented; suffice it to mention that they were characterised by cyanosis of a particularly impressive appearance, by the expectoration of large quantities of thick purulent sputum, by increased frequency of pulse-rate and of respiration, and, most important of all, by an obstinate resistance to every form of treatment and an exceedingly high mortality. Although the majority of sufferers were among the younger men and those of comparatively poor physique, there was no definite age-incidence ascertainable, nor did it appear that this condition occurred only in those who had previously suffered from chest trouble and were presumably predisposed. Since a large majority of cases of pulmonary diseases encountered in this command run a notoriously anomalous course, we were at first inclined to believe that we were dealing with some local peculiarity, and it was only whilst special investigations were in course of procedure that we learnt that cases, apparently similar to our own, had been observed among troops both in other parts of the country and in France. Under the superintendence of Major Herbert French, consulting physician to the Aldershot Command, a paper embodying the clinical, bacteriological, and pathological results of our cases (which from the character of the expectoration we have also been accustomed to describe as "purulent bronchitis") has been in course of preparation for some months. In our investigations we have had the inestimable advantage of the services of Dr. Eyre, bacteriologist to Guy's Hospital, who has most generously afforded us all the assistance and resources of his great experience. I feel it only fair to my colleagues to state that our paper was begun long before the appearance of the article in the current issue of THE LANCET to which I allude, until the appearance of which we were not even aware that any special investigations were proceeding elsewhere. I have only to add, and it is a distinct pleasure to do so, that in every detail our results accord with those of your contributors and with every one of their six conclusions we agree without qualification. We have some additional features of interest to add chiefly on the clinical side, but these do not in any way affect the main conclusions. In fact, I hope I may be permitted to express the opinion that this admirable paper by Lieutenant Hammond, Captain Rolland, and Lieutenant Shore is a remarkably complete account of the disease and may fairly be regarded as a standard description of "a symptom-complex constituting a definite clinical entity."

I should like also to venture the hope that the publication of this paper and my own small reference to it may have the effect of focussing attention upon this special type of bronchitis which it is reasonable to anticipate will reappear during the winter months, and to stimulate the production of some form of treatment (or possibly even prophylaxis) of one of the most lamentably fatal diseases it appears possible to encounter.—I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS,
Temporary Captain, R.A.M.C., Officer in Charge of Medical Division, The Connaught Hospital, Aldershot.

July 16th, 1917.

ROYAL COLLEGE FOR THE BLIND, UPPER NORWOOD.—An anonymous donation of £1000 has been sent to the Public Trustee towards the amount which is required to secure the grant of £12,500 promised by the Carnegie Trustees to the Royal College for the Blind.

TRELOAR CRIPPLES' HOSPITAL, ALTON.—At a garden fête opened at Southwood Hall, Highgate, on July 14th, Sir William Treloar said that Lady Irene Curzon had collected the greatest individual amount, £500, of any member of the Queen Alexandra League, which worked for the institution. Since the opening of the hospital 1450 children had been cured

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed by an Explosion in H.M.S. Vanguard.

Surgeon E. Rayner, R.N., qualified M.B., B.C. Camb. in 1912.

Fleet-Surgeon E. Cox, R.N., was educated at Cambridge University and at the London Hospital, and qualified in 1899. After holding an appointment in the out-patient department at the London Hospital, he joined the Royal Navy.

Staff-Surgeon W. G. Barras, R.N.V.R., was educated at Glasgow and at Durham Universities, and qualified in 1889. Prior to going on active service he was in practice at Govan, Glasgow, where he held several appointments, and was for some time assistant medical officer of health and bacteriologist to the burgh of Govan.

Died of Wounds.

Lieut. B. Cohen, R.A.M.C., qualified at Glasgow in 1913, and was in practice at Cape Town, South Africa, prior to joining the R.A.M.C.

Capt. W. A. Sneath, M.C., R.A.M.C., was educated at Manchester University and graduated as M.B., Ch.B. in 1910. In 1912 he took the English double qualification, and proceeded to the F.R.C.S. Eng. in the following year. After holding appointments at the Seamen's Hospital, Greenwich, at the Manchester Royal Infirmary, and in the Anatomy Department of the Victoria University, he practised at Ashton-under-Lyne. The award of the Military Cross was recorded in THE LANCET of Sept. 30th, 1916, p. 621.

Capt. H. E. Rose, R.A.M.C., attached Coldstream Guards, qualified at Glasgow in 1913, and was in practice at Acton, London, before joining the R.A.M.C.

Capt. A. G. Peter, M.C., R.A.M.C., attached Seaforth Highlanders, was educated at Aberdeen University and at King's College, London, and qualified in 1903. He had held appointments in the borough of Croydon, at the Brook and Grove Hospitals of the Metropolitan Asylums Board, and at the St. Pancras Infirmary, Highgate, and was medical officer of the Prestea Gold Mines and of the Prestea district. The award of the Military Cross was recorded in THE LANCET of Jan. 20th, 1917, p. 125.

Died.

Temp. Lieut. J. E. Foreman, R.A.M.C., was a student at the London Hospital, and qualified in 1906. He was in practice at Bournemouth before joining the R.A.M.C., and was senior resident medical officer at the Boscombe Military Hospital. He died at Alexandria, Egypt, from enteric fever, on July 9th.

Previously reported Missing, believed Drowned, now reported Drowned.

Lieut. J. G. Bradley-Smith, R.A.M.C. (see THE LANCET, June 2nd, 1917, p. 856).

Wounded.

Lieut.-Col. W. H. L. McCarthy, M.C., R.A.M.C.
Lieut. H. R. Grellet, R.A.M.C., attached Yorks and Lancs Regiment.
Lieut. J. A. McIlroy, R.A.M.C.

Wounded and Prisoner in German Hands.

Capt. H. Stokes, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Capt. B. N. Rice, East Yorkshire Regt., died of wounds, son of Dr. B. Rice, of Warneford Hospital, Leamington.

Second Lieut. G. L. Stokes, Royal Field Artillery, killed in action, son of Dr. L. Stokes, of Blackheath, Kent.

Second Lieut. L. N. Cook, M.C., Royal Lancaster Regt., killed in action, youngest son of the late Dr. J. N. Cook, at one time medical officer of health at Calcutta.

Fleet-Surgeon E. Cox, R.N., killed by an explosion in H.M.S. *Vanguard*, youngest son of the late Surgeon-General C. L. Cox, I.M.S.

Midshipman A. W. de Segundo, R.N., killed by an explosion in H.M.S. *Vanguard*, second son of Major C. S. de Segundo, R.A.M.C. (T.).

Lieut.-Commander A. C. H. Duke, R.N., killed by an explosion in H.M.S. *Vanguard*, eldest son of the late Colonel A. W. Duke, R.A.M.C., of Tunbridge Wells.

FOREIGN DECORATIONS.

French.

Légion d'Honneur : Croix d'Officier.—Lt.-Col. W. R. Blackwell, R.A.M.C.

Légion d'Honneur : Croix de Chevalier.—Capt. (acting Lt.-Col.) R. Magill, R.A.M.C., Spec. Res.; Maj. E. T. Potts, D.S.O., R.A.M.C.; Temp. Capt. G. Rankine, M.C., R.A.M.C.; Capt. W. H. P. Hey, R.A.M.C.; Capt. F. M. Hughes, R.A.M.C.

Légion d'Honneur : Croix de Guerre.—Temp. Capt. T. Meagher, M.C., R.A.M.C.; Capt. J. A. C. Scott, M.C., R.A.M.C.; Temp. Capt. C. E. S. Wright, R.A.M.C.: Maj. W. H. K. Anderson, Canadian A.M.C.

THE TRAINING OF THE DISABLED SAILOR AND SOLDIER: A COUNTY SCHEME FOR LANCASHIRE.

We were able to state in THE LANCET of April 28th that in Lancashire the county authority was collecting information from all the education authorities with regard to the facilities they would be able to offer for training disabled men in various industries. A conference of representatives of local committees under the Naval and Military War Pensions Act, 1915, with the education authorities and other bodies in Lancashire had been convened by the lord lieutenant of the county, and held in Preston on Feb. 16th, when Mr. G. M. Barnes, M.P., the Minister of Pensions, and Sir Arthur Griffith-Boscawen, M.P., the Parliamentary Secretary to the Ministry, strongly supported the idea of coöperative action among the various interested bodies. At this conference it was resolved that it was the duty of the Government to provide the necessary cost of dealing with disabled sailors and soldiers and to repay any expenditure thrown upon local education authorities and other bodies in making provision for them. A committee appointed at this conference to go into the question has presented a report, which has reached us through Professor H. Lloyd Snape, director of education for Lancashire County Council.

The report states the unanimous conviction of the committee that a scheme for coöperative action among the local statutory committees is the only method by which each committee will be able to carry out its duties with efficiency and economy. It recommends the appointment of an advisory committee with a central bureau for the collection and distribution of information, able to focus the requirements of all the local committees, and to suggest schemes which can be carried out to meet the combined demand with a reasonable expenditure. Where such scheme related to training in technical or other educational institutions it would be sent to the education or other appropriate authority. If the scheme had reference to the extension of hospital or hostel accommodation and treatment, the advisory committee would be a useful medium for pressing the subject forward on behalf of all the local committees. The central bureau would, further, be the medium for bringing the local committee requiring any treatment or training for a man into direct communication with the institution capable at the moment of supplying it, and would keep a register of hostels and lodging-houses suitable for men who might require accommodation in any district, while receiving outdoor treatment at a hospital, or training.

An Appendix contains the report of a committee instructed to collect information on the available sources of supply for training disabled men in the county. Education committees were circularised in whose areas it seemed likely that facilities for training disabled men could be provided during the daytime, and replies to the circular were received from 56 authorities, all of whom were willing to make their resources available for training men. A detailed list has been compiled from these returns, the committee seeking to select from the information before them those areas where training for particular trades could be carried out under the best conditions. They believe that it would be preferable to provide thoroughly good opportunities of training at a limited number of centres, rather than a much larger number, in some of which, at least, training could only be of a partial character. By following such a policy, not only would training be more efficient, but expenses materially reduced. A number of education authorities were relying on the coöperation of private as well as public employers in training men. Such assistance had actually been offered in some areas, pointing to a means whereby the facilities for training could be almost indefinitely extended.

The list of facilities available includes large groups, such as (*a*) agriculture and horticulture, (*b*) engineering trades,

(*c*) building and allied trades, (*d*) coal mining, (*e*) textile occupations, (*f*) boot and shoe manufacture, (*g*) nautical occupations, (*h*) printing and allied trades, (*j*) commercial and clerical occupations, (*k*) art and art industries, and a miscellaneous group including gas-fitting, instrument-making, basket-making, boot repairing, tailoring, hair-dressing, and various other minor occupations.

A further Appendix to the Report gives detailed information with regard to the hospitals and kindred institutions and their ability to deal with disabled sailors and soldiers. The table is an extensive one, giving under the several headings: (1) name and address of institution; (2) particulars of treatment given; (3) the use of electrical and mechanical apparatus, with the qualifications of the operator; (4) availability for men resident outside the district; and (5) and (6) the number of in- and out-patients respectively who could be treated. A single example of the information offered may be given: Ashton-under-Lyne—(1) the District Infirmary, Ashton-under-Lyne; (2) all treatment usually given in a properly equipped general hospital—the hospital contains 140 beds, 22 of which are devoted to wounded soldiers, and is extending its accommodation by 28 beds, so as to take in more soldiers; (3) there is a fully equipped X ray and electrical department, under the control of a skilled medical officer, and also a department for massage, controlled by a fully qualified masseuse; (4) not at the present time, as the demands of the district (the infirmary serving Stalybridge, Hyde, Mossley, and Dunkinfield, as well as the Ashton-under-Lyne area) are more than the infirmary can fully cope with.

HOSPITALS IN INDIA.

In the House of Commons Lord H. Cavendish-Bentinck recently asked Mr. Austen Chamberlain, as Secretary for India, whether his attention had been called to the fact that there were over 140 British officers now stationed at Abbottabad, North-West Frontier Province, and that there were from 60 to 70 British officers there in peace time; whether he was aware that there was no hospital within 85 miles, and that the only hospital accommodation locally available was one room taken from the native troops' hospital. The question was a prelude to the request for an inquiry to be made into the efficiency of the Indian military medical service, and gave Mr. Chamberlain an opportunity of showing to the House that medical matters in India had been anxiously present to his mind for some time previous to the publication of the Mesopotamia Report. He said that some time ago he had formed the opinion that the standard of comfort and accommodation in the hospitals for British and Indian troops must be improved, and that progress had already been made in this respect before the Mesopotamia Report was received. Mr. Chamberlain has resigned office, and was undoubtedly placed in a position by the Report which made his action a logical one, but those who know his work during his term of authority can all testify to his anxious consideration of medical questions, if and when their *pros* and *cons* came before him. Mr. Chamberlain's description of his own position in respect of the medical breakdown in Mesopotamia was not only dignified but transparently truthful. He said:—

> I cannot say one word of excuse to palliate the horrible breakdown which occurred. I think nearly 18 months ago, 15 or 16 months at least, before I was in possession of a tithe of the information which is now available to the House and the whole country, I said that in my opinion a lamentable and, I think, inexcusable breakdown had occurred. From first to last there was no attempt made by me or by any member of the Government to pretend that things were going well when we knew they were going ill, or to hush up any maladministration which had taken place. The Commission spoke in generous terms of the letters and telegrams which I addressed to the Viceroy on this subject, but they want to know why I did not send a public despatch at the same time in the year 1915. I will tell the House what information I had in 1915. Ctesiphon was fought at the end of November and Sheikh Saad was fought on Jan. 6th. It was after these two actions that the suffering was greatest, and that great calamities and horrible miscarriages took place. I searched my papers before going to the Commission, and I cannot find that I had any information except three extracts from a letter written by Second-Lieutenant Palmer, Lord Selborne's son, which was sent to me by Lord Selborne. It was a single letter written by an officer who was killed at Ctesiphon, which reached his family after his death. How could I have founded a despatch on material such as that? What put me first on the alert was the statement by Lieutenant Palmer that he thought the sanitary arrangements were bad compared with what he had seen in South Africa, and he subsequently wrote a letter in which he described a statement I had made in this House on the authority of information received from Mesopotamia, as to the condition of the supply of comforts for the hospitals at the base as "eye-wash." That is all the information I had, and I had no conception of a breakdown such as we now know had taken place. What I was anxious for was to see that all the ordinary precautions had been taken to guard against the special dangers of a tropical climate. I did not know of any shortage of equipment and of personnel, and I was anxious to take these special precautions which tropical climates might require. It was not until the middle and close of February that the information began to reach this country in streams in letters from Mesopotamia showing what awful conditions had prevailed. I do not think there was material there for a despatch. I regret that the warnings which at my instance Lord Hardinge conveyed to the Commander-in-Chief were not sooner acted upon and were not more seriously received. I wrote direct and telegraphed direct to the Viceroy because, in the first place, I wanted to go direct to the highest authority in India and not have my message intercepted in the bureaux and the reply sent by I knew not whom, without the Viceroy or the Commander-in-Chief knowing anything about it. I telegraphed directly a private telegram because I wanted both these officers to know that the Secretary for State was personally concerned. I telegraphed to Lord Hardinge because I thought that in matters of this kind the heart of the civilian is more tender than the heart of a soldier, and that he is less ready to accept those hardships as the necessary incidents of a campaign. I was right, and if action had followed Lord Hardinge's representations at any rate the evils would have been redressed much earlier than they were.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Staff-Surgeon N. B. U. Jacob and Surgeon W. E. Lloyd have been placed on the retired list.

To be temporary Surgeons: E. A. Crook, H. Banks, E. C. Dunlop, W. Duncan, A. G. Brett, J. L. Lamont, A. O. Ross, J. Aydon, W. F. Harvey, H. J. R. Surrage, W. Meade.

ARMY MEDICAL SERVICE.

TERRITORIAL FORCE.

Lieut.-Col. H. W. Thomson to be Assistant Director of Medical Services.

Lieut.-Col. H. W. Thomson vacates the appointment of Assistant Director of Medical Services.

Major (acting Lieut.-Col.) H. Richardson to be Assistant Director of Medical Services, and to retain the acting rank of Lieutenant-Colonel whilst so employed.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of a Division: H. B. Fawcus, E. P. Sewell.

Lieut.-Col. J. C. B. Statham to be temporary Colonel whilst employed as Assistant Director of Medical Services, Lines of Communication.

F. C. Dwyer to be temporary Lieutenant-Colonel.

Majors retaining the acting rank of Lieutenant-Colonel whilst in command of Casualty Clearing Stations: C. H. Turner, J. Powell, B. F. Wingate.

Temp. Major E. L. Stone, Canadian A.M.C., to command a Canadian Field Ambulance, and to be temporary Lieutenant-Colonel while so employed.

Major S. A. Smith, Canadian A.M.C., to be temporary Major.

The undermentioned are granted temporary rank whilst employed at the Whipps Cross War Hospital:—As Major: Andrew Stewart. As Captain: Daniel Broderick.

J. Patterson, Canadian A.M.C., to be temporary Captain.

Temp. Major J. G. Hunt, Canadian A.M.C., is seconded for service with Anglo-Russian Red Cross Hospital, without pay and allowances.

Temporary Lieutenants to be temporary Captains: J. Goss, A. C. Lambert, W. A. Shafto, H. L. Morrow, J. J. Walshe, K. Black, B. E. Hughes, W. Reynolds, R. L. M. Wallis, E. G. Stanley, P. R. O'R. Phillips, M. A. MacKinnon, R. Stipe, J. G. Jones, P. S. Marshall, W. J. Moir, W. H. T. Jones, V. R. Hirsch, J. N. Lyons.

J. B. Barry, late temporary Captain, is granted the honorary rank of Captain.

Officers relinquishing their commissions: Temp. Major R. G. Riches. Temp. Capts. R. T. Cooke, M. J. Gallagher, F. H. Looney, H. T. Wilkins, R. D. Brunton, J. H. Hart, H. P. D'A. Benson, W. M. S. Robinson, W. Tregenza, E. C. Pratt, A. H. Tovey, A. Adams, J. W. McCagie, J. Muirhead, P. J. Murphy, G. N. Urie, J. H. White, L. E. V. E. Clayton, C. Reidy, M. H. Paterson, G. R. C. Wilson, N. G. Meade, A. D. Clanchy, W. F. Blewitt, A. Whitby, S. H. Booth, A. E. Henton, F. J. Wheeler, H. W. Binks, M. Macnicol, A. F. Menzies, W. A. L. H. Henderson, J. Clark, A. B. Northcote, W. S. Lazarus-Barlow, I. Alluan, A. Rennie, S. Y. Walsh, L. E. Ashley-Emile, W. Bannerman, A. A. Moon. Temp. Lieuts. G. Stivala-Aspinall, J. M. W. Morison, H. H. Lawrence, H. R. Helsby, A. F. W. Millar (on account of ill-health), J. Duredon.

SPECIAL RESERVE OF OFFICERS.

To be acting Lieutenant-Colonels whilst in command of a Field Ambulance: Major Rowland P. Lewis, Capt. Cyril Helm.

H. Robinson to be temporary Major whilst employed at the Horton (County of London) War Hospital.

Capt. M. J. Graham to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

To be Lieutenants: J. C. C. Howe (from University of London Contingent, O.T.C.), A. B. MacDougall, J. Scott, J. Adams.

Lieut. (on probation) Albert E. W. Sandelson relinquishes his commission.

TERRITORIAL FORCE.

Lieut.-Col. H. W. Thomson is restored to the establishment on vacating the appointment of Assistant Director of Medical Services.

Major (acting Lieut.-Col.) H. Richardson is seconded whilst holding an appointment as Assistant Director of Medical Services.

Capt. C. A. Spooner to be Major and to remain seconded.

Capt. (temp. Lieut.-Col.) D. E. Evans reverts to the temporary rank of Major on alteration in posting.

Capt. E. H. E Stack is seconded for duty with General Hospital.

Capt. (acting Lieut.-Col.) J. Blackwood relinquishes the acting rank on ceasing to command a Field Ambulance.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

FIRST B.M. EXAMINATION.

Organic Chemistry.—R. S. Creed, Trinity; J. Harris, Jesus; H. L. Rayner, Balliol.

Human Anatomy and Physiology.—C. C. Chavasse, Hertford; H. P. Hodge, non-collegiate; and D. B. Pauws, Trinity.

SECOND B.M. EXAMINATION.

Materia Medica and Pharmacology.—T. A. Brown, B.A., Exeter; E. H. Cluver, B.A., Hertford; D. C. Dixey, B.A., Brasenose; R. Gainsborough, Magdalen; C. F. Krige, B.A., Hertford; J. E. B. Morton, B.A., Queen's; and A. E. Thomas, B.A., University.

Pathology.—H. G. Burford, B.A., Christ Church; J. C. Dixey, B.A., Brasenose; T. B. Dutton, M.A., Magdalen; J. E. B. Morton, B.A., Queen's; H. W. Toms, B.A., Jesus; B. Tordoff, B.A., St. John's; and K. F. D. Waters, B.A., Keble.

Forensic Medicine and Public Health.—J. J. Conybeare, B.A., New; G. R. Cowie, B.A., University; E. A. Crook, New; T. B. Dutton, M.A., Magdalen; W. F. Harvey, M.A., Balliol; R. M. Humphreys, St. John's; R. W. Lush, B.A., Christ Church; J. J. Savage, B.A., Brasenose; and J. P. S. Walker, B.A., Oriel.

Medicine, Surgery, and Midwifery.—J. J. Conybeare, B.A., New; G. R. Cowie, B.A., University; E. A. Crook, New; W. F. Harvey, M.A., Balliol; R. W. Lush, B.A., Christ Church; and J. P. S. Walker, B.A., Oriel.

UNIVERSITY OF CAMBRIDGE.—At examinations for medical and surgical degrees held in Lent and Easter terms the following candidates were successful:—

SECOND EXAMINATION.

Part I., Human Anatomy and Physiology (March).—N. D. Dunscombe, Downing; H. A. A. Pargeter, Sidney Sussex; R. Y. Paton, Trinity; R. R. Sarra, B.A., Sidney Sussex; W. S. R. Thomas, Queens'; W. G. Tilleke, non-collegiate; and V. A. van Geyzel, St. John's.

Part II., Pharmacology and General Pathology (April).—G. F. Abercrombie, Caius; L. H. Bartram, B.A., Trinity; H. B. Bullen, B.A., Clare; F. T. Burkitt, B.A., Christ's; W. R. Carling, Emmanuel; A. E. Clark-Kennedy, B.A., Corpus Christi; C. H. Gunasekara, B.A., Clare; S. L. Higgs, B.A., St. John's; C. McC. Jones, B.A., Downing; G. W. Karunaratna and J. R. Mitchell, B.A., Clare; E. N. Showell-Rogers, B.A., Caius; A. G. Shurlock, B.A., Jesus; S. D. Sturton, Emmanuel; C. E. Taylor, B.A., Trinity Hall; G. W. Theobald, Emmanuel; D. Wallice, B.A., Clare; and D. E. Wijewardene, B.A., Peterhouse.

Part I., Human Anatomy and Physiology (June).—B. H. Cole, B.A., H. Selwyn; H. A. Crowther, St. John's; R. H. Emmett, Trinity; D. G. Garnett, Pembroke; F. R. Oliver and C. L. Pasricha, Caius; A. D. Porter, Pembroke; A. E. Roche, Magdalen; W. Shaw, St. John's; N. G. Thomson, Emmanuel; and A. D. Whitelaw, St. John's.

THIRD EXAMINATION.

Part I., Surgery and Midwifery (June).—H. R. Bickerton, B.A., Trinity Hall; A. J. Copeland, B.A., Pembroke; E. T. D. Fletcher, B.A., Magdalen; H. Gainsborough, B.A., Downing; A. R. Jennings, M.A., Jesus; J. B. S. Lewis, B.A., Downing; A. H. Pearce, B.A., Clare; and S. Riddiough, M.A., King's.

Part II., Medicine, Pathology, and Pharmacology (June).—K. B. Dickson, B.A., Trinity; H. Gainsborough, B.A., Downing; D. W. R. Richardson, B.A., Caius; and F. A. Williamson, B.A., Queens'.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

M.B., Ch.B., Final Examination.—Part I. only: Evelyn Bessie Salter.

Diploma in Public Health.—Part II., completing examination: Isaac Bernard Barclay. Part II. only: Henry James Drew Smythe.

Diploma in Dental Surgery, Final Examination.—William Holder Shipway.

B.D.S., Second Examination.—Doris Breta Milton.

Diploma in Dental Surgery, Second Examination.—Violette Bourgeois.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology, held on June 28th and 29th and July 2nd and 3rd, 91 candidates presented themselves of whom 60 were approved and 31 were rejected. The following are the names of the successful candidates:—

Fazal Farid Abdullah, St. Mary's; Robert Geoffrey Addenbrooke, Birmingham University; John Griffith Barrie, Guy's; George Frederick Baxter, Westminster and King's College; Alexander Herbert Bean, University College; Solomon Blackman, London Hospital; Hugo Boger, University College; Hubert Brookman, Middlesex; George Frederic Burnell, King's College; Frederick Cecil Wray Capps, Cambridge University and St. Bartholomew's; Louis Ely Reginald Carroll, St. Bartholomew's; Leslie Charles Frederick Chevens, St. Thomas's; Francis Christian, Calcutta and Middlesex; Gilbert Leedham Clements, Birmingham University; Henry Nathan Warner Collins, King's College; Percival Charles Collyns and Jose Joaquim da Gama Machado, St. Bartholomew's; Kenneth Vincent Deakin, Manchester University; Francis Percival de Caux, St. Bartholomew's; Archibald Glen Duncan, London Hospital; Dwijendra Nath Dutt, Edinburgh University and Middlesex; Arthur James Fenn and James Hassall France, King's College; Werner Göthe, Middlesex; Martin Curgenven Hartley, London Hospital; Henry Hirst, Manchester University; Thomas Barnard Hodgson, Oxford University and St. Bartholomew's; Donald Hunter, London Hospital; Frederick James, King's College; Madari Andia Keshvalu, Madras and University College; Joseph Victor Landau, St. Bartholomew's; Henri Toussaint Le Vieux, Guy's; John Andrew Mackay Ross, St. Bartholomew's; Tadros Ibrahim Makar, King's College; Prosper Henry Marsden, Liverpool University; Christopher Wesley Narbeth, St. Bartholomew's; Charles Frederick Newman and Vernon Arthur Newton, Birmingham University; Daniel Joseph O'Meara, Guy's; Frederick Ferdinand Petersen and Norman August Marais Petersen, London Hospital; Herbert Alfred Potter, Middlesex; Shaikh Abdul Hakeem Qureshi, Bombay and University College; Edgar Lewis Jones Reason, St. Mary's; John Groscort Reed, St. Thomas's; Ronald Cunliffe Shaw, Manchester University; James Victor Alexander Simpson, Middlesex; William Arthur Merrett Smart, London Hospital; Frederic Downing Spencer, Birmingham University; Philip Steinberg, London Hospital; Edward Howard Strange, University College, Cardiff; Aubrey Clifford Teuten, St. Mary's; Mark Tree, London Hospital; Terence Watson Turner, Aberdeen; Germain Victor Leon van Acker, Oxford University; Norman Victor Wadsworth, Guy's; William Walsham, St. Mary's; Tudor Williams, University College, Cardiff; Henry Norman Witham, St. Thomas's; and Jacob Elias Zeitlin, London Hospital.

At the quarterly examination in Practical Pharmacy, held on July 5th and 6th, the following candidates were approved:—

Alexis Oswald Bekenn, Birmingham University; Charles Clement Beney, Cambridge University and London Hospital; Henry Walter Breese, Middlesex; Mary Burfield, Marion Constance Vera Clarke, and Beatrice Lakeman Collins, Royal Free; Olive Francis Conoley, London Hospital; Cyril George Coombs, Guy's; Nancy Barbara Daniell, University College Hospital; James Douglas Dimock, Sheffield University and Middlesex; Clarence Franklin Eminson, Charing Cross; Nancy Kathleen Gibbs, Cardiff; Thomas John Ernest Gittins, Birmingham University; Samuel Gordon, Cardiff; Cyril Bowdler Henry, Sheffield University and Westminster; Arthur Robert Hill, Middlesex; Cyril Patrick Hines, Charing Cross; Harry Cunliffe Hopkinson, Cambridge and Manchester Universities; Mohammed Ibrahim, Middlesex; Violet Ruth Jeffery, Royal Free; Evelyn Hope Johnson, Manchester University; George Henry Johnson, Middlesex; David Ellis Jones and Wyndham Moody Jones, Cardiff; Eric John Llewellyn Jones-Evans, St. Thomas's; Francis William Kemp, Charing Cross; George Spencer Lajus Kemp, Sheffield University; Wright Lambert, Middlesex; Kenneth Wilfred Leon, St. Bartholomew's; Elizabeth Kathleen Mackay, Charing Cross and King's College; Edgar Duncan Macmillan, St. Bartholomew's; Donald Gregory Macpherson, New Zealand University and University College Hospital; Gordon Manet-Wallett, St. Bartholomew's; David Chaim Mintzman, Marseilles, Paris, and King's College; Ivor Noble Orpwood Price, Cardiff; Mohammed Abbas Ragy, King's College; Mary Jane Ripley, University College Hospital; Walter Manley Savory, Middlesex; Harry Norman Schapiro, Guy's; James Mortimer Schofield, St. Mary's; John Share-Jones, Liverpool University; Mohamed Sidky, Cairo and Guy's; Norman Leigh Simpson, Cardiff; Margaret Charlotte Sorace, Royal Free; Sobhi Rizkallah Simaika, St. Bartholomew's; George Foster Smith, Manchester University; William Henry Barton Stride, private study; Annie Dorothea Symons, Royal Free; Leslie James Timings, Birmingham University; Edward Sherman Toogood, Oxford University and University College Hospital; Jacob Eliza de Villiers van der Merwe, Guy's; William John Vickers, Birmingham University; and Fuad Wanis Zaglama, Manchester University.

THE NATIONAL MEDICAL UNION.—The annual general meeting of the National Medical Union was held on June 30th at 346, Strand, London, W.C., under the presidency of Mr. V. T. Greenyer. The report of the Council having been received and adopted and the balance-sheet approved, the following, among other resolutions, were passed:—

1. That the question of establishing a Ministry of Health should be postponed till after the war, in view of the importance of the question to the profession and the number of its members abroad on military service.

2. That any provision made for medical attendance on discharged disabled soldiers and sailors ought to be outside the National Insurance Acts, and that such provision ought to be made under conditions which will allow of these persons being attended by any registered practitioner they may respectively choose.

3. That the National Medical Union protests against the State employment for wages or reward of conscientious objectors by the National Health Insurance Commission or by any other Government department.

4. That the National Medical Union, while upholding the principle of saving infant lives, strongly disapproves of the methods of the Local Government Board. The propaganda involved in the National Baby Week cannot but tend to demoralisation.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on July 17th, the following gentlemen, having passed the requisite examinations, were admitted Fellows:—

Thomas Ewing, M.B., Ch.M. Sydney; William Lang Hodge, L.R.C.S. Edin.; John MacLean, M.B. Tor., M.C.P. & S. Sask.; William Wood Shorten, L.R.C.S. Edin.; Horace Powell Winsbury White, M.B., Ch.B. Edin.; and Frederick Joseph Woo, M.B., Ch.B. Edin.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The following awards have been made:—Burney Yeo Scholarships: E. H. Cluver, Hertford College, Oxford; M. S. Thomson, Downing College, Cambridge. Senior Scholarship: L. B. Goldschmidt. Tanner Prize: D. C. Clark and C. K. Scales (equal). Todd Prize and Medal: A. Blackstock. Class Prizes: Medicine—L. M. Moody; Obstetric Medicine—A. Blackstock; Pathology—D. C. Clark and L. M. Moody; Hygiene—L. M. Moody Psychological Medicine—A. N. M. Davidson.

METROPOLITAN HOSPITAL SUNDAY FUND.—The following are among the amounts received at the Mansion House to date:—

	£
St. Mark's, North Audley-street	1440
St. Columba's, Pont-street	436
Holy Trinity, Sloane-street	271
Essex Church, Kensington	256
St. Paul's, Knightsbridge	222
St. James's, Paddington	217
Greek Church, Bayswater	167
St. Peter's, Cranley-gardens	146
St. Paul's, Onslow square	133
Holy Trinity, Tulse Hill	127
St. Margaret, Halstead	118
St. Barnabas, Kensington	94
Christ Church, Chislehurst	91
Holy Trinity, St. Marylebone	85
All Souls', Hampstead	82
All Saints', Highgate	80
Annunciation, St. Marylebone	76
St. Peter's, Bayswater	69
Holy Trinity, Sydenham	66
Fulham Parish Church	65
Barnet Parish Church	62
St. Paul's, Wimbledon Park	56
St. Peter's, Belsize Park	51
St. Mary and St. Mary-le-Park, Battersea	51
Regent-square Presbyterian Church	51
St. Peter's, Dulwich Common	51
St. James's, West Hampstead	51
St. Luke's, Kilburn	50
St. James's, Hatcham	48
St. Giles-in-the-Fields	45
St. Luke's, Battersea	45
St. Cuthbert's, West Hampstead	45
St. German's, Blackheath	43
All Saint's, Notting-hill	41
St. Margaret, Lee	41
Bromley Cong. Church	40
St. Mary Magdalene, Munster-square	40
St. Dunstan's-in-the-West	38
Streatham Wesleyan Church	38
Union Chapel, Islington	38
St. James's, Holloway	34
Islington Parish Church	33
Christ Church, Chelsea	32
Holy Trinity, Haverstock-hill	31
St. Michael's, Abbey Wood	30
Merton Parish Church	28
St. Mary's, Finch.ey	27
Streatham Hill Cong. Church	27
St. John's, Hoxton	27
Clapham Parish Church	26
St. Margaret, Streatham	26
St. John's, Southall	26
St. Gregory, Earlsfield	26
St. Augustine's, Grove Park	25
St. Dunstan's, East Acton	25
St. John's, Balham	24
St. Alban's, Streatham	23
Ferme Park Baptist Church	22
St. Barnabas, Homerton	22
St. Peter's, Horndon	21

Total available for distribution about £50,000.

SUMMER GRADUATION IN BELFAST.—The summer graduation at the Queen's University of Belfast took place on July 11th in the Examination Hall. There were 200 women students on the rolls last session, and their success in the Faculty of Medicine proved remarkable. This faculty has markedly increased in numbers and of 1000 officers supplied to the Navy or Army by the University the great majority are doctors.

THE NATIONAL WELFARE AND ECONOMY EXHIBITION.—This exhibition, of which Queen Alexandra is a patron, will remain open until August 11th. It is being held at the New County Council Hall, Westminster Bridge, S.E., and the profits will be devoted to the British Red Cross Society. The exhibits cover a very wide range and deal with welfare and economy, both in the home and workshop. The care of children and the preservation and selection of food are demonstrated on the one hand, and on the other the health and comfort of the worker. Under this last heading fall the exhibits arranged by the Ministry of Munitions for the purpose of showing what is being done for the improvement of health and industrial conditions among munition workers. Sleeping accommodation provided in the hostels which are being erected to house workers imported into districts where lodgings are scarce is illustrated by a small cubicle for one girl worker and a double cubicle for two friends. These are particularly interesting as showing economy of fitting under healthy conditions. A model dining-room and kitchen has been fitted up by the Carron Iron Company, and a munition workers' canteen such as is to be seen in many controlled munition establishments has been arranged by the Richmond Gas and Meter Company, Warrington. A model hospital ambulance room shows how and where minor accidents and illnesses can be dealt with among munition workers; Messrs. Reynolds and Branson and Messrs. Cuxson Gerrard and Co. exhibit in this connexion sterilised dressings and appliances modelled on the suggestions of the Home Office and of the Health of Munition Workers Committee. In the same section is a display of various garments used by workers when filling shells or dealing with corrosives. Cloak-room accommodation designed to provide privacy without wasting space is well demonstrated by the Crittall Steel Furniture Company. A small crêche represents the kind of provision made in many populous districts for the care of infants of women munition workers and is an excellent example of what such a nursery should be; and here may be mentioned the exhibit of the Glaxo Company, which practically demonstrates most of the things which a mother ought to know if she wishes to rear a healthy child. Dolls dressed as babies, mothers, nurses, and "Gamps" take a prominent part in this objective teaching. Other exhibitors are the Jeyes' Sanitary Compounds Company, 64, Cannon-street, E.C., and Messrs. Brown and Polson, 6, Bouverie-street, E.C., while food economy, children's welfare, and agricultural societies are well represented. The exhibition is not yet complete, but there is a sufficiency of exhibits, lectures, and demonstrations on domestic and national economy to make a visit to it valuable.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ELECTION OF PRESIDENT.—A meeting of the Council was held on July 13th, Sir W. Watson Cheyne, the President, in the chair. The President announced the results of the recent election to the Council, as already reported in THE LANCET, and stated that Mr. Harrison Cripps, being third on the poll, became substitute member for the late Sir Frederic Eve until July, 1920. Mr. Cripps, Mr. Warren Low, and Mr. James Sherren were introduced, and they made declarations in the terms of the oath prescribed by the Charter of 1800 and took their seats on the Council. It was resolved that diplomas of the Licence in Dental Surgery should be granted to three successful candidates. It was resolved to grant, in conjunction with the Royal College of Physicians of London, Diplomas of Public Health to five successful candidates. The thanks of the Council were given to Mr. Alban Doran for the gift of several valuable books to the library; to Sir William Osler for presenting a manuscript letter by G. J. Guthrie, President of the College in 1833, 1841, and 1854, addressed to Inspector-General William Fergusson on the subject of field surgery and wounded in the Peninsula; and to Mr. W. E. Dring, of Tenterden, for presenting to the College a crayon portrait of Robert Liston, presented by him in 1834 to Robert Swinford Francis, one of his first pupils and dressers. The following appointments were made:—Hunterian professors: Arthur Keith, six lectures on the Anatomical and Physiological Principles Underlying the Treatment of Bone and Joint Injuries; Jonathan Hutchinson, one lecture on the Surgical Treatment of Trigeminal Neuralgia; William Tindall Lister, one lecture on the Pathological Aspect of Certain War Injuries of the Eye: Percival Pasley Cole, one lecture on the Treatment of War Injuries of the Jaws and Face; Edward Kenneth Martin, two lectures on Projectile Fracture of Limb Bones; and Hildred Carlill, one lecture on Syphilis of the Nervous System. Arris and Gale lecturers: Frederick Gymer Parsons, one lecture on Research on the Structure of the English Skeleton; and William Wright, two lectures on the Quaderni d'Anatomia by Leonardo da Vinci. Erasmus Wilson lecturer: Samuel George Shattock, six demonstrations on Surgical Pathology. Arnott demonstrator: Arthur Keith, 14 demonstrations to form a continuation of the Hunterian lectures.

Surgeon-General Sir George H. Makins was elected President and Mr. Charters J. Symonds and Mr. W. F. Haslam were elected Vice Presidents. Mr. Cripps was elected a member of the Executive Committee of the Imperial Cancer Research Fund in the place of the late Sir Frederic Eve. The President was appointed a member of the Committee of Reference.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual provincial meeting of this society was held at Birmingham on June 30th, Dr. John Robertson, the President, being in the chair. Mr. T. W. N. Barlow opened a discussion upon the status of the medical officer of health in relation to the proposed Ministry of Public Health. He considered that an immediate end should be made of a system whereby seven or eight different Government departments dealt with matters affecting the health of the community, with consequent overlapping, overstaffing, and increase of expense. Unification was as necessary at the periphery as at the centre, and there should be one body locally to deal with all questions affecting public health. The predominant nucleus of that body should be the existing health committees of large urban councils, county borough councils, and county councils, for the reason that they already had large experience in such matters and they were under the control of the ratepayers who would have to supply them with funds. There would have to be a person appointed to advise this body, and to supervise, coördinate, and control all agencies having for their object the improvement of public health. That person should be the one who had already organised tuberculosis work, maternity and child welfare centres, school medical work, and the ordinary work of a public health department. He could not agree with any proposal for the appointment of dual officials, one administrative, the other clinical. The President felt that there was a lack of appreciation of what had been done directly and indirectly by medical officers of health in preventive medicine. The records of results attained in this country justified the claims of the medical officer of health to be the head of the new department. Dr. A. Bostock Hill said that the general practitioner was still in fear of the Local Government Board on the one hand and of the administrative officer on the other. The coming together of the general practitioner and the medical officer of health would be to their mutual advantage, for public health was developing on the lines of medicine rather than on those of pure science. Dr. G. F. Buchan was of opinion that the care of the individual would have to be the main conception of the Ministry of Public Health, which must have expert advisers possessed of organising ability and imagination of a sort trained to deal with health problems. Lieutenant-Colonel Herbert Jones, Mr. T. O. Halliwell, Dr. S. Barwise, and Dr. E. H. Snell also took part in the discussion.

A QUESTION OF FEES.—At Co. Fermanagh Assizes an important case was heard recently, Dr. E. C. Thompson, surgeon to the Co. Tyrone Infirmary, Omagh, sued the Lisnaskea board of guardians for £12 12*s.* in payment of three special consultation visits to the workhouse hospital. He had motored 31 miles on each occasion and he said that, owing to the increased cost of petrol and other necessaries, he could not take his former fees of £9 9*s.* After medical evidence had been tendered in support of Dr. Thompson's claim Mr. Justice Madden gave a decree for the full amount.

IN a sympathetic notice of Sir Armand Ruffer in a recent number of the *Paris Médical* Professor Jules Guiart states that the Greek Army has arranged to perpetuate the memory of a great benefactor, and Generale Comnéne, War Minister to the National Government, has directed that one ward in every Greek hospital shall in future bear the name of Ruffer.

MEDICAL MAGISTRATE.—The name of Mr. Peter Buchanan, M.B., C.M. Glasg., has been added to the Commission of the Peace for the County of Gloucestershire.

ROYAL ALBERT HOSPITAL, DEVONPORT.—A special meeting of the governors of the Royal Albert Hospital was held last week, under the presidency of Lord St. Levan, to consider the serious financial position of the institution. It was stated that the present adverse balance of the hospital was £1257, and it was estimated that by September the deficit would be £2857. After some discussion it was unanimously resolved to sell stock which would realise about £2100.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Military Service (Review of Exceptions) Act: Western Command and London.

THE Select Committee of the House of Commons which is investigating the subject of the medical examination of recruits for the Army, particularly in relation to the Military Service (Review of Exceptions) Act, has heard further evidence.

On Wednesday, July 11th, Surgeon-General HATHAWAY gave evidence in regard to the work of medical boards during the time he was D.D.M.S. on the Western Command. He had visited nearly all the boards in that area. When he heard that there was dissatisfaction with any particular board he inspected it himself, or sent some officer experienced in recruiting to examine the matter at the earliest possible moment. He had ceased to act in the Western Command about the last week in June. In the Western Command, taken as a whole, the medical boards worked harmoniously. A very large portion of the evidence was directed to individual cases arising in Manchester and Liverpool in connexion with medical examinations.

Colonel C. R. TYRRELL, A.D.M.S., London District, spoke as a witness of the composition of recruiting medical boards in London. Members of those boards, he said, felt very much that they were abused.

Mr. SUTTON (a member of the Committee) said that they were abused by civilian members of their own profession all over the country.

Mr. MOONEY (who was acting as chairman): Your opinion is that the doctors have done their work well?

Colonel TYRRELL: That is my opinion.

Mr. MOONEY: And they are working under very adverse circumstances?

Colonel TYRRELL: That is my opinion. They deserve credit and thanks rather than blame.

On Thursday, July 12th, Sir RYLAND ADKINS, K.C., M.P., gave evidence based on his experience as a member of the Northamptonshire Appeal Tribunal. His general impression was that the arrangements for medical examinations and re-examinations were not working in a way which gave the tribunals as much assistance as he thought they would be glad to receive. There had been very remarkable contrasts in the classification of men who came before his tribunal. The impression forced on his mind was not that the medical men concerned were not men of ability and devotion, but they were overworked and had to do things too quickly. Therefore the results which they arrived at were wanting in weight. There was now a feeling of uncertainty and variableness which made it very difficult to send to the Army everyone who ought to go in and keep out men who would be better out than in. He thought that the delay in sending men to the central medical boards should be obviated, and that other boards of this kind should be set up at other places than London and Leeds. At present he pointed out there was no security that once in the Army a man's classification would not be raised by an officer over whom the tribunal had no control. He suggested that there should be a medical tribunal to whom a man could appeal on having his category raised by his commanding officer and his medical officer. He would be glad if the classification could only be raised by a medical board. That would do much to re-establish public confidence in districts where it had been seriously impaired.

Mr. A. RICHARDSON, M.P., chairman of the Law Society's Appeal Tribunal, also gave evidence. He expressed the view that medical boards were at present without effective supervision.

The Mesopotamia Commission Report.

Both Houses of Parliament on Thursday, July 12th, and Friday, July 13th, discussed the report of the Mesopotamia Commission, and the main trend of the debate turned upon the nature of the inquiry which was to be instituted to investigate the actions of persons, military and civil, who were affected by the Report. The Government at first indicated that in its view a court of inquiry should be set up under the provisions of the Army (Courts of Inquiry) Act, 1916, consisting of two persons who had held high judicial office and three officers. A specially appointed statutory commission was suggested as an alternative in the course of the debate. Mr. LLOYD GEORGE intimated that if the House of Commons preferred the second alternative as the best method of getting at the truth, the Government was prepared to submit proposals carrying it into effect. There was no desire to shield anyone who was in the least to blame for the terrible catastrophe in Mesopotamia. From the Government bench certain criticisms were passed on the methods by which the Commission had arrived at its findings. Mr. CHAMBERLAIN announced his resignation of the office of Secretary of State for India. The Prime Minister said that there was nothing in the report of the Commission to justify the right honourable gentleman feeling that he ought to have resigned.

On Wednesday, July 18th, Mr. BONAR LAW said that in view of the considerations urged during the recent debates and the objections raised to further inquiry as a preliminary to executive action in case of persons implicated in the Mesopotamia report, whether the inquiry were by any existing tribunal or by a special statutory court to be set up for this purpose, H.M.'s Government had decided not to proceed further with their former suggestion. As regarded the soldiers, the Government had decided that they should be dealt with by the Army Council in the ordinary way.

Public Health (Prevention and Treatment of Disease) (Ireland) Bill.

A Bill has been introduced in the House of Commons by Mr. DUKE, Chief Secretary for Ireland, "to amend Section 148 of the Public Health (Ireland) Act, 1878, as respects the prevention and treatment of disease in Ireland." It is in the following terms:—

1.—(1) The Local Government Board for Ireland shall have power to declare that one of the authorities to execute and enforce regulations made by the Board under Section 148 of the Public Health (Ireland) Act, 1878, with a view to the treatment of persons affected with cholera or any other epidemic, endemic or infectious disease, and preventing the spread of cholera and such other diseases, shall be the council of a county, and that section shall have effect accordingly as if a county council were an authority within the meaning of that section:

Provided that, except in case of emergency, the Board shall not require the council of a county to execute and enforce any such regulations without the consent of the council.

(2) Any expenses incurred by the council of a county in the execution or enforcement of such regulations shall be raised as a county at large charge.

2. This Act may be cited as the Public Health (Prevention and Treatment of Disease) (Ireland) Act, 1917, and may be cited with the Public Health (Ireland) Acts, 1878 to 1907, as the Public Health (Ireland) Acts, 1878 to 1917.

The Bill was read a second time on Tuesday, July 17th.

HOUSE OF COMMONS.

THURSDAY, JULY 12TH.

War Bread and Invalids.

Mr. ROWNTREE asked the Parliamentary Secretary to the Ministry of Food whether his attention had been called to the deleterious effect of war bread upon the health of many aged persons and invalids; and whether in *bonâ-fide* cases of necessity certified by a doctor he would consider the possibility of permitting the use of ordinary flour.—Mr. BRIDGEMAN replied: Applications for the use of special flour in the manufacture of bread, when supported by a doctor's certificate, are considered by the Ministry of Food, and licences are granted on the recommendation of a special board appointed by the Royal Society.

Pay of Medical Officers.

Colonel GRETTON asked the Financial Secretary to the War Office whether he was aware of the disparity between the pay of medical officers belonging to the Territorial Force and officers who had recently joined the Royal Army Medical

Corps; whether he was aware that majors serving as medical officers in the Territorial Force received the same pay as a recently joined lieutenant of the Royal Army Medical Corps; would he state what were the reasons of this disparity; and was it proposed to take any steps to put experienced medical officers of the Territorial Force in the same position as officers of the Royal Army Medical Corps.—Mr. FORSTER wrote in reply: The Territorial Force officer is paid at the same rate as the regular R.A.M.C. officer of the same rank and service, except that only embodied service counts for increase of pay in the same rank. The comparison which my honourable and gallant friend wishes to make is probably that between the pay of the Territorial Force officer and of the temporary officer engaged on special contract terms during the war. When allowances and terminal gratuities are taken into account, the major of the Territorial Force receives considerably more than the special contract officer.

MONDAY, JULY 16TH.

Admiralty Payments to Surgeons.

Mr. FRENCH asked the Secretary to the Admiralty whether he was aware that the local surgeons and agents of the Admiralty were receiving only 2*s*. 6*d*. per patient for professional attendance and supplying medicine to the coast-guards and men of the Royal Navy and 1*s*. per mile one way for locomotion expenses; whether applications had been received from any of these officers requesting an increase of these rates of pay; and whether, having regard to the increased cost of living and the cost of drugs and petrol, he would see his way to recommend an advance of fees and allowances so as to ensure that surgeons and agents might, without loss to themselves, do justice to their patients and receive fair remuneration for their services.—Mr. MACNAMARA replied: The rates of remuneration are, with a few exceptions, in which higher rates are warranted by the circumstances of the case, 2*s*. 6*d*. each visit to or consultation with each patient (and not, as the question may perhaps imply, 2*s*. 6*d*. per case), with mileage allowance as stated. Only one application for increased remuneration has been received during the past year, although there are some 580 surgeons and agents. In the circumstances a case for a general increase of fees and allowances has not been established.

Referring to a further question relating to delays in the payments, Mr. MACNAMARA said: The suggestion that the surgeons' and agents' claims are always almost three months overdue before they are fully paid is not borne out by the facts. For instance, of 228 received in April and May for the period ended March 31st last, between 84 and 85 per cent. were finally paid in less than two months from date of receipt, 70 per cent. being settled in less than six weeks. Arrangements have, moreover, been in force since an early date in the war, by which payments on account amounting to two-thirds of any claim exceeding £10 or thereabouts are made immediately upon their receipt.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

POPE, HENRY BROUGHAM, B.A., M.D., B.Ch. (T.C., Dub.), has been appointed Medical Officer of Health for Clevedon (Somerset).

To be Certifying Surgeons under the Factory and Workshop Acts: MCINNES, A., L.R.C.P. Edin., L.R.C.S. Edin., L.F.P.S.G. (Raunds District of the county of Northampton); MCKINNEY, B. W., M.B., Ch.B. Belf. (Lisnaskea District of the county of Fermanagh); WALSH, F. P., L.R.C.P. Edin., L.R.C.S. Edin., L.F.P.S.G. (Rosscarberry District of the county of Cork).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRKENHEAD BOROUGH HOSPITAL.—House Surgeon. Salary £250 per annum and war bonus, board, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £300 per annum, with apartments, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BROMSGROVE, WORCESTERSHIRE ASYLUM.—Locum Tenens Medical Officer.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—Resident House Surgeon. Salary £150 per annum, with board, &c.

DARTFORD, KENT, CITY OF LONDON MENTAL HOSPITAL.—Temporary Assistant Medical Officer. Salary £7 7*s*. per week, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.

DURHAM COUNTY HOSPITAL.—House Surgeon. Salary and bonus at rate of £180 per annum, with board, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident Medical Officer. Salary £200 per annum, with board, &c. Also Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Female Resident.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Female House Surgeon.

NORTHAMPTONSHIRE WAR HOSPITAL.—Resident Medical Officer. Salary £1 daily, with board, &c.

NOTTINGHAM GENERAL HOSPITAL.—Female House Physician for six months. Salary at rate of £250 per annum, with board, &c.

OFFICERS' HOSPITAL, 18, Paddington-street.—Locum Tenens as M.O.

PAISLEY CORPORATION INFECTIOUS DISEASES HOSPITAL.—Female Practitioner.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—District Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House Surgeon.

ROCHESTER, ST BARTHOLOMEW'S HOSPITAL.—Junior Resident House Surgeon. Salary at rate of £150 per annum, with board, &c.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.

ST. ANDREW'S HOSPITAL, Dollis Hill, London, N.W.—Resident Medical Officer for six months. Salary £323 15*s*., with board, &c.

SALOP COUNTY COUNCIL.—Temporary Tuberculosis Medical Officer. Salary at rate of £500 per annum.

SHEFFIELD ROYAL INFIRMARY.—Two House Surgeons. Salary £120 per annum, with board, &c.

STAFFORDSHIRE EDUCATION COMMITTEE.—Female Assistant School Medical Inspectors. Salaries at rate of £400 per annum.

THROAT HOSPITAL, Golden-square, W.—Two Resident House Surgeons. Salaries £100 per annum, with board, &c.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.—Casualty Surgical Officer. Salary £100 per annum, with lunch.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Assistant Medical Officer for three months. Salary at rate of £5 per week, with board, &c.

WEST RIDING OF YORKSHIRE, MIDDLETON IN-WHARFEDALE SANATORIUM, near Ilkley.—Assistant Resident Medical Officer. Salary £325 per annum.

WINCHESTER, HAMPSHIRE COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health. Salary £300 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

WOOLWICH UNION INFIRMARY, Plumstead, S.E.—Locum Tenens Medical Officer.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Hendon, in the county of Middlesex; and at Castleford, in the county of Yorks.

Births, Marriages, and Deaths.

BIRTHS.

BAREFOOT.—On July 15th, at Cecil Mansions, Balham, the wife of Captain H. J. L. Barefoot, R.A.M.C.T., of a son.

DORNHORST.—On July 13th, at Manor-road, Stamford-hill, the wife of Dr. Hubert Dornhorst, of a daughter.

HARVEY.—On July 14th, at Primrose Mansions, Battersea Park, S.W., the wife of Major G. A. D. Harvey, R.A.M.C., of a daughter.

MOORE.—On July 11th, at St. Paul's-road, Clifton, the wife of Clifford A. Moore, M.S., F.R.C.S., Captain, R.A.M.C., of a son.

PEACOCK.—On July 12th, at the Pemberton Nursing Home, St. John's Park, North, the wife of H. Maurice Peacock, of Epsom—a daughter.

VALENTINE.—On July 12th, at Granada House, Southsea, the wife of Lieutenant J. A. Valentine, R.A.M.C. (Temp.)—a son.

WARNER.—On July 11th, at Courtleigh, Finchley-road, Golder's-green, the wife of Captain E. Lloyd Warner, C.A.M.C., of a daughter.

WILKINSON.—On July 15th, at Cottesmore, Sutton, Surrey, the wife of Captain John Douglas Wilkinson, R.A.M.C., of a son.

MARRIAGES.

HILL—KENNY.—At Aldershot, St. Joseph's R.C. Church, J. F. Hill, Captain, R.A.M.C., attached the Inniskilling Dragoons, B.E.F., France, to Kathleen Josephine, daughter of Mrs. Kenny, Abbey Street, Roscommon, Ireland.

DEATHS.

LEAHY.—On July 17th, at 4, Iddesleigh Mansions, Victoria-street, S.W., after a long and trying illness, Lieutenant-Colonel A. W. D. Leahy, M.D., F.R.C.S., late I.M.S.

PETER.—On July 5th, died from wounds, Captain Alastair Gordon Peter, M.C., R.A.M.C., M.A., M.B., Ch.B. (Aberd.), L.R.C.P. (Lond.), M.R.C.S. (Eng.), D.P.H. (Camb.).

RAYNER.—On July 9th, killed in an explosion on board on H.M.S. *Vanguard*, Edward Rayner, Surgeon, R.N., M.B. Cantab., F.R.C.S. Eng.

ROSE.—On July 7th, from wounds received in action, Captain Harold E. Rose, R.A.M.C.

STEWART.—On July 12th, at his residence, Hollywood, Pendleton, Manchester, Alexander Stewart, M.D., J.P., aged 62 years.

TWEEDY.—On July 12th, at Newquay, Cornwall, Reginald Carlyon Tweedy, M.D., &c., of Kenilworth, late temporary Major, R.A.M.C.

VAUX.—On July 11th, at Sunderland, Ralph Thomas Vaux, M.B., B.S.

WILSON.—On July 13th, at St. Hilda's-terrace, Whitby, William Henry Wilson, M.B., C.M., aged 47.

*N.B.—A fee of 5*s*. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Short Comments, and Answers to Correspondents.

HERB-GROWING AND COLLECTING.

A MEETING to further the interests of the National Herb-Growing Association was recently held at Plymouth. The secretary stated that since the formation of the society in September, 1914, 120 branches had been established and during the first year of its work the association had supplied 100 tons of herbs to the manufacturing chemists. They had also recently received an order for 100 tons of dandelion roots for India. The meeting finally passed a resolution approving of the work of the society and promising support to a scheme for the provision of a drying-shed in or in the neighbourhood of Plymouth.

The work of the amateur herb-grower will be greatly facilitated by reading a pamphlet drawn up by Mrs. M. Grieve, of the Whins Vegetable Drug Farm, Chalfont St. Peter, Bucks, entitled "Vegetables from the Hedgerows," and giving an account of the many wild plants of our fields and hedges that have been employed as vegetables and salads, as well as those which may be used as substitutes for tea and coffee. Our native fruits are also enumerated. Mrs. Grieve is no mere enumerator, but, whether as writer or pupil trainer, obviously possesses an enthusiasm for her subject which enables her to give much useful and accurate information in an attractive manner.

THE NEEDS OF WAR PENSIONERS.

It has been brought to the notice of the Ministry of Pensions that a number of pensioners are appealing to the charitable on the ground of insufficient means. The Local War Pensions Committee, whose address is obtainable from the nearest Post Office, have ample powers for dealing with all deserving cases of this nature from public funds, and the charitable public should refer such applicants to this body.

M.D.—The adjective was applied to the non-odorous purulent discharges from injuries, abscesses, or wounds, surgical and other, which were pursuing a normal course in pre-Listerian times.

J. L. M. is referred to a note on depilatories on p. 825 of THE LANCET of May 26th.

CORRECTION.—The address of the Sterling Corporation Ltd. is 16, Wigmore-street, London, W. 1.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat Nose, and Ear. Dr. Perue: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Perue: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 18th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 12	...	119	78	54	57	62	Fine
,, 13	...	123	81	62	62	71	Fine
,, 14	...	123	84	67	64	71	Cloudy
,, 15	...	100	72	61	59	63	Cloudy
,, 16	0·10	119	71	57	59	65	Cloudy
,, 17	0·03	121	77	57	61	66	Cloudy
,, 18	0·37	92	69	59	62	63	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON W.C. 2.

MANAGER'S NOTICES.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1917 will be ready shortly. Bound in cloth, gilt lettered, price 21*s.*, carriage extra.

Cases for binding the half-year's numbers (inland edition) are now ready. Cloth, gilt lettered, price 2*s.* 6*d.*, by post 2*s.* 10*d.*

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

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Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

The following journals, magazines, &c. have been received:—Journal of State Medicine, Annals of Tropical Medicine and Parasitology, St. Paul Medical Journal, Medical Review, Journal of the Royal Naval Medical Service, Revista del Circulo Médico de Córdoba, Medical Officer, Therapeutic Gazette, Bulletin Mensuel de la Office International d'Hygiène Publique, American Journal of Public Health, Dublin Journal of Medical Science.

Communications, Letters, &c., have been received from—

A.—Annals of Medical History, New York, Publisher of; Messrs. Allen and Hanburys, Lond.; Addenbrooke's Hospital, Cambridge, Sec. of.

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COMMUNICATIONS:
Academy of Medicine, Paris, 10th Nov., 1908.
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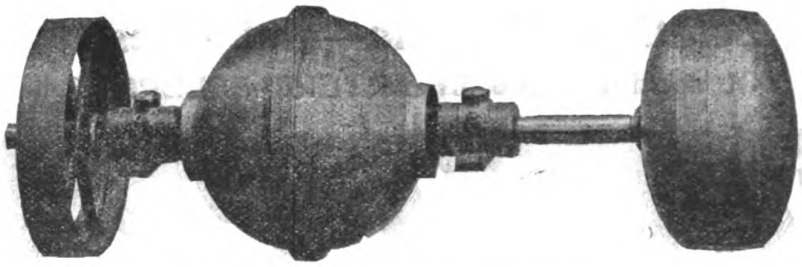
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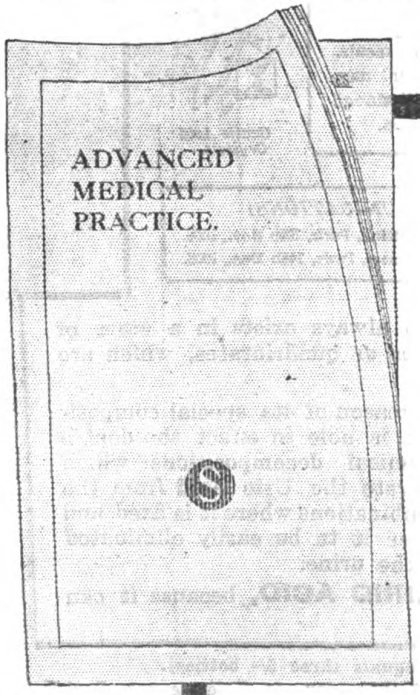


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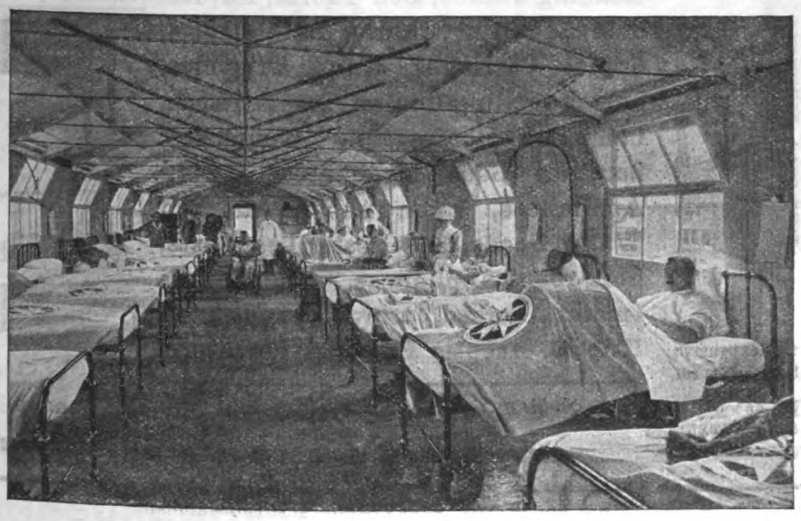
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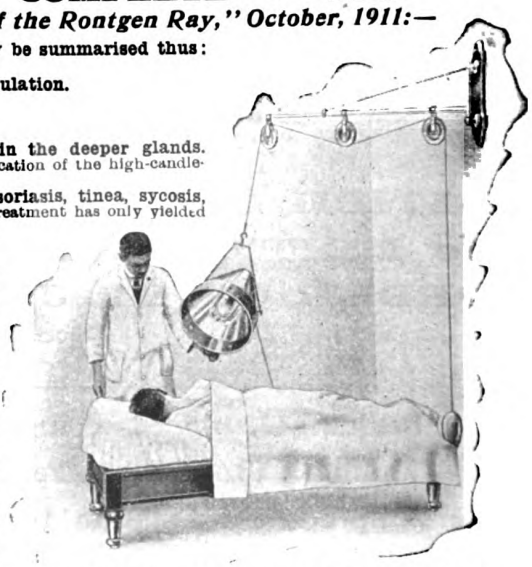
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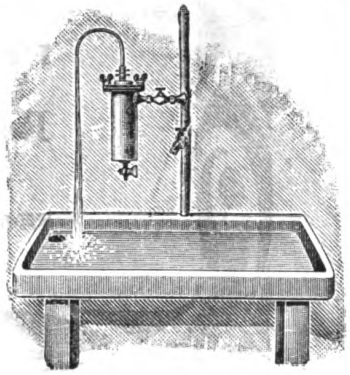
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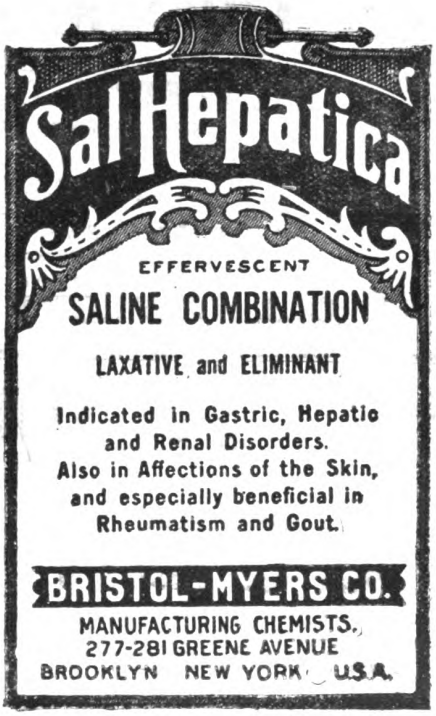
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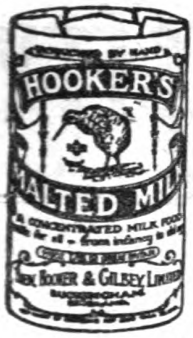
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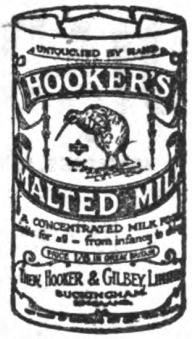
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Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14-16, Ludgate Hill, E.C.
Telephone: Redhill 344. Telephone: City 5297.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

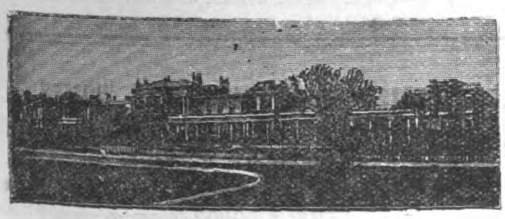
Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.
Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—
LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.
MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.
Other days by appointment.

Visiting and Consulting Physicians: Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.
Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.



NORTHWOODS HOUSE
WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES

Situated in a large park in a healthy and picturesque locality easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.
Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

NEW SAUGHTON HALL

PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL CASES

POLTON, MIDLOTHIAN.

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres. There is also a SEASIDE HOUSE at GULLANE, EAST LOTHIAN.

Railway Stations—Polton, five minutes; and Loanhead, en minutes' walk from the Institution—reached in half-an hour from the Waverley Station, Edinburgh. Telephone—4Loanhead.

Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, J. BATTY TUKE, M.D. Inclusive terms from £84 to £400 per annum, according to requirements.

NORTHUMBERLAND HOUSE,

Telegrams: "SUBSIDIARY, LONDON." GREEN LANES, FINSBURY PARK, N. Telephone: No. 888, North.

(Established 1814.)

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." **Telephone: New Cross 576.**

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D.Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone 769.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

MR. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

HOMES FOR INEBRIATE WOMEN.

ELLISON LODGE, Herne Hill, S.E.
CORNGREAVES LODGE, Erdington, Birmingham.
HAMOND LODGE, Terrington St. Clement, King's Lynn [Norfolk.
TEMPLE LODGE, Torquay.

Terms: Drawing-Room, £2 2s., £1 1s.; Work-Room, 15s., 12s. 6d., 10s. Kitchen, 7s. 6d. weekly.

REV. GERALD A. THOMPSON, Secretary Church of England Temperance Society, 50, Marsham-street, Westminster, S.W.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales.

PENDYFFRYN HALL SANATORIUM

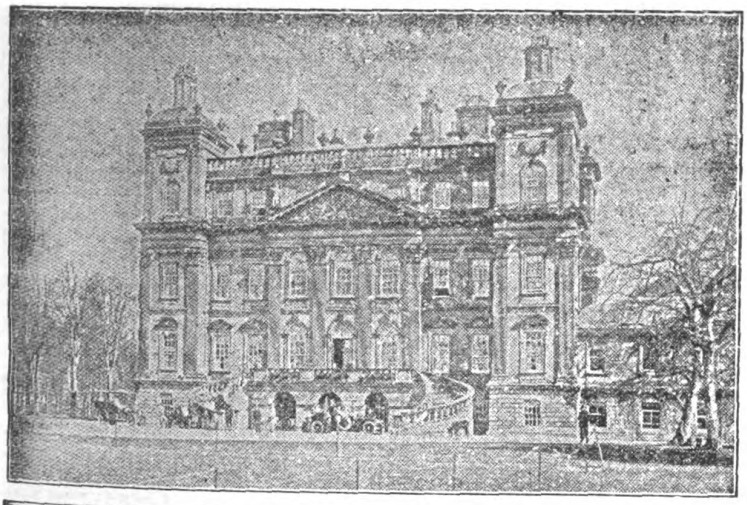
(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pines, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.



DUFF HOUSE, BANFF SCOTLAND.

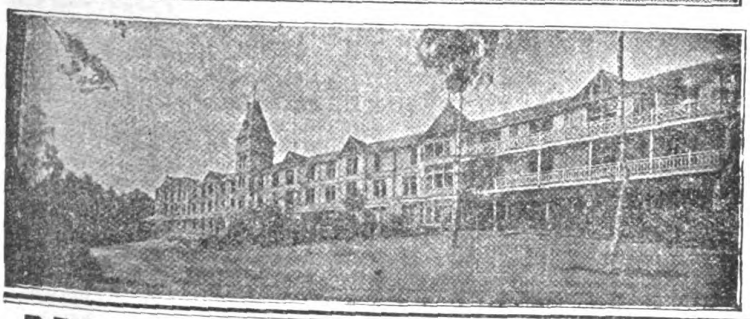
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE. LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 45, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88.
Telegrams: "HYDRO, CATERHAM."

Resident Physician:
A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric Installation for Baths and Medical purposes. Dowsing Radiant Heat D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to

H. CHALLAND, Managing Director.

HOME FOR FEEBLE-MINDED.

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD, near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes. This Institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 307

Home

FOR THE CARE AND TREATMENT OF

Mentally Afflicted Ladies

OTTO HOUSE,

17, North End Road, West Kensington, W.

The Home stands in large grounds close to West Kensington Station.

For terms, apply to Miss BRODIE, Resident Lady Superintendent.

Telephone: Hammersmith 1004.

A. H. SUTHERLAND (Licensed Proprietor), 2a, Marloes Road, Kensington, W.

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtsfold," Haslemere, Surrey. Telephone: 22 Haslemere.

Accouchement.—Nursing Home for Maternity Cases only, 25, Hyde-terrace, Leeds. Fees moderate. Superintendent: Miss EDWARDS.

Nurse Meacock (Certificated) receives ACCOUCHEMENT CASES in her private house. Good nursing and doctor. Highly recommended. Terms moderate.—12, Cherington-road, Hanwell.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street Trafalgar-square, W.C.

Carew Building, Bodmin.—There are a few vacancies for Mental Private PATIENTS of both sexes in the Private Asylum connected with the Cornwall County Asylum.
For terms and further particulars apply to the Medical Superintendent.

Physician (married) has Vacancy for PATIENT. Mild Mental, Epileptic, and Nervous cases generally received. Large house and grounds. Established 20 years. Tennis and croquet lawn, also boating and fishing. Motor kept. House situated one and a quarter hours from London. Highest medical and clerical references, also former patients. Terms moderate —Address, No. 391, THE LANCET Office, 423, Strand, W.C. 2.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at COLTHURST HOUSE SCHOOL.
Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.
For further information apply to the Resident Medical Superintendent David Lewis Colony, near Alderley Edge, Cheshire.

PORTSMOUTH CORPORATION MENTAL HOSPITAL

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.
Inclusive charges from £1 11s. 6d. per week.
Apply to the Medical Superintendent.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.
Private Home for Mentally afflicted Ladies; ten only received.
Terms from 4½ gns. weekly.
Apply, Medical Officer, or Mrs. Peele.

ST. GEORGE'S RETREAT,

BURGESS HILL, SUSSEX.
An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. New Marine Brighton Residence for change. Voluntary Boarders taken.
Resident and Visiting Medical Officers. London 1¼ hours.
For terms, &c., apply to the Superioress.
Telephone: Post Office 90 x. Telegrams: "Wivelsfield Green."

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.
President: The Right Hon. the EARL OF JERSEY.
This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

City of London Mental Hospital, Dartford, Kent.—Temporary ASSISTANT MEDICAL OFFICER required. Candidates must be duly registered under the Medical Act. Salary £7 7s. per week, with board, apartments, and washing. Apply, stating full particulars, to the Medical Superintendent.

Corporation of Paisley.—Infectious DISEASES HOSPITAL.—Wanted, a LADY PRACTITIONER as Resident at the above Hospital. The post is a temporary one during the war. There is a certain amount of general Public Health work in all departments, which affords an excellent experience. Particulars on application to the Town Clerk, Paisley.

Northamptonshire War Hospital.—RESIDENT MEDICAL OFFICER wanted, one with experience in Bacteriology preferred. Candidates must not be eligible for Military Service. Salary £1 daily, with board, lodging, &c.
Applications, with copies of two testimonials, to be sent to Administrator, War Hospital, Duston, Northampton.

Durham County Hospital.—The post of HOUSE SURGEON will be vacant at the end of September, and is open to qualified men ineligible for Military Service. Salary and bonus at the rate of £180 a year, with board and lodging. Particulars may be obtained from the undersigned, to whom applications should be sent.
68½, Saddler street, Durham. WM. R. WILSON, Secretary.

Staffordshire Education Committee.—WOMEN ASSISTANT SCHOOL MEDICAL INSPECTORS.—Applications are invited for the posts of Assistant School Medical Inspectors, at salaries at the rate of £400 per annum, the appointments to be for the period of the war. For form of application and conditions of appointment apply to the Director, County Education Offices, Stafford.

Royal Albert Hospital, Devonport.—A HOUSE SURGEON (Gentleman or Lady) is required urgently. Applicants must be duly registered. Salary £200 per annum, with board and laundry.
Applications, with testimonials, to Chairman of the Selection Committee. CHAS. W. DICKINSON, Capt. R.N., Hon. Secretary.
9th July, 1917.

The Throat Hospital, Golden Square, W. 1.—Two RESIDENT HOUSE SURGEONS are required to take up the duties at the end of August. Salaries £100 per annum, with board and laundry.
Applications, accompanied by copies of three testimonials, should be sent in not later than the 31st July.
W. HOLT, Secy.-Supt.

Nottingham General Hospital.—Wanted, a HOUSE PHYSICIAN (Medical Woman). She will be appointed for six months. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 30th inst.
By order.
H. M. KEELY, Secretary.

Addenbrooke's Hospital, Cambridge. Applications are invited for the post of RESIDENT HOUSE SURGEON.
Salary £150 per annum, with board, residence, and laundry.
Candidates must be duly registered.
Applications, stating age, qualifications, &c., accompanied by eight copies each of not more than four recent testimonials, to be sent to the undersigned as soon as possible.
17th July, 1917. RICHARD J. COLES, Secretary-Superintendent.

The Royal Infirmary, Sheffield (363 beds, of which 133 are Military).—HOUSE SURGEONS.—Wanted, Two Resident Medical Officers (Male, ineligible for Military Service, or Female) for the above posts, who must be fully qualified. Salary £120 per annum, with board and residence. After three months £150 per annum.
Applications, with copies of recent testimonials, to be addressed to me immediately.
By order.
JNO. W. BARNES, Secretary.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W. 1.—DISTRICT RESIDENT MEDICAL OFFICER, Male (ineligible for Military Service) or Female, required. Candidates must be registered. The appointment is for four months. The salary is at the rate of £60 per annum, with board, residence, and washing.
Applications, with copies (not originals) of not more than three testimonials, should be sent to the Secretary.
Canvassing is prohibited. Duties to commence on 1st August, 1917, or as soon after as possible. ARTHUR WATTS, Secretary.

Salop County Council.—The Salop County Council invite applications for the appointment of a Temporary TUBERCULOSIS MEDICAL OFFICER (present Officer on active service). Salary at the rate of £500 per annum and travelling expenses.
Forms of application and conditions of appointment can be obtained from the County Medical Officer of Health, County Buildings, Shrewsbury, to whom applications should be sent on or before August 4th, 1917.
F. CROWTE, Clerk of the Salop County Council.
Shirehall, Shrewsbury.

University College Hospital, Gower-street, W.C.

—The post of CASUALTY SURGICAL OFFICER will become vacant on September 1st next. Salary £100 per annum, with lunch in the Hospital. Daily duty from 9.30 A.M. to 5 P.M.

Applications to be sent in to the Secretary by noon on Tuesday, July 31st.

Wolverhampton & Midland Counties

EYE INFIRMARY.—HOUSE SURGEON wanted on 29th August, preferably with a knowledge of Refraction. Candidates must be ineligible for Military Service. There are 56 beds for In-patients (20 of which are reserved for Military Cases) and a large Out-patient Department.

Salary £150, with furnished apartments, board, and laundry.

Applications with copies of three recent testimonials, should reach me not later than 3rd August next.

ARTHUR M. MANBY, Secretary, pro tem.

The Eye Infirmary, Wolverhampton, 17th July, 1917.

Royal London Ophthalmic Hospital

(MOORFIELDS EYE HOSPITAL), City-road, E.C. 1. Founded 1804.—Applications are invited from men, who are ineligible for Military Service, for the office of THIRD HOUSE SURGEON.

Candidates must be registered medical practitioners, and must be prepared to begin the duties on 1st August, 1917. Salary at the rate of £50 a year and war bonus, with board and residence in the Hospital. Applications, stating age and qualifications, together with copies of recent testimonials, must be received by the Secretary-Superintendent not later than the 23rd July, 1917.

The appointment is for a period of not less than four months.

7th July, 1917. ROBERT J. BLAND, Secretary-Superintendent.

West Riding of Yorkshire.—Assistant

RESIDENT MEDICAL OFFICER.—The County Council of the West Riding of Yorkshire invite applications for the appointment of Assistant Resident Medical Officer (Male or Female) for the Middleton-in-Wharfedale Sanatorium, near Ilkley.

Salary £325 per annum.

Further particulars and form of application may be had from the undersigned, by whom all applications, with copies of not more than three testimonials, must be received not later than 30th July, 1917.

FRANCIS ALVEY DARWIN, Clerk of the County Council.

County Hall, Wakefield, July, 1917.

Resident Medical Officer.—The Com-

mittee of Management of the HOSPITAL for CONSUMPTION and DISEASES of the CHEST, Brompton, invite applications for the post of Resident Medical Officer in the absence of the present holder who is on active service. Salary £200, with board and residence. The duties at present attaching to the post include routine Laboratory work and Lectures to the Nursing Staff, for both of which an additional remuneration of £141 is received.

Candidates must be registered practitioners and qualified in Medicine and Surgery, and must be over Military age. Printed instructions, with particulars of the duties, may be obtained from the Secretary at the Hospital.

Brompton, July, 1917. FREDERICK WOOD, Secretary.

Assistant Resident Medical Officer.—

The Committee of Management of the HOSPITAL for CONSUMPTION and DISEASES of the CHEST, Brompton, invite applications for the post of Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

Candidates must be registered practitioners, and must have held a resident hospital appointment for six months. Applicants must be ineligible for Military Service.

Brompton, 30th June, 1917. FREDERICK WOOD, Secretary.

Hampshire County Council.—

ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.—The Hampshire County Council propose to appoint a Temporary Assistant County Medical Officer of Health for the period of the War, and invite application from fully qualified Medical Men or Women. Possession of a Diploma or Degree in Public Health will be considered an advantage. Salary £300, in addition to travelling allowances.

Applications, with copies of not more than three testimonials, upon a form which, with the conditions of appointment, may be obtained from the undersigned, must be delivered at the Castle, Winchester, on or before Thursday, the 26th July, 1917.

The canvassing of members of the County Council or any Committee, personally or otherwise, is strictly prohibited and will disqualify.

H. BARBER, Clerk of the County Council.

The Castle, Winchester, 10th July, 1917.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Liverpool Eye and Ear Infirmary,

Myrtle-street, Liverpool.—Applications are invited for the post of LADY HOUSE SURGEON. Particulars as to duties, remuneration, &c., may be obtained from the Hon. Sec. of the Medical Board.

Locum Tenens Medical Officer

required. Apply, the Medical Superintendent, Worcestershire Asylum, Bromsgrove.

Borough Hospital, Birkenhead.—

Wanted, HOUSE SURGEON (Male or Female). Salary £250 and war bonus, board and laundry. Applications, with testimonials, to be sent to the Secretary at the Hospital.

Woolwich Union Infirmary.—Locum

TENENS MEDICAL OFFICER wanted at once. Apply, Medical Superintendent, Infirmary, Plumstead, S.E. 18.

17th July, 1917.

East Suffolk and Ipswich Hospital

(425 beds, 300 for wounded).—Wanted, a qualified LADY RESIDENT. For particulars of appointment apply

The Hospital, Ipswich. ARTHUR GRIFFITHS, Secretary.

Queen Mary's Hospital for the East

END (170 beds).—Wanted, HOUSE SURGEON, to commence duties in August. Applications should be addressed to the undersigned. Male applicants must be ineligible for Military Service.

A. W. SCAIVENER, Secretary.

St. Andrew's Hospital, Dollis Hill,

London, N.W.2.—Applications are invited from doubly qualified and registered candidates for the post of RESIDENT MEDICAL OFFICER, vacant 4th August. Six months' appointment. Salary £323 15s., with board, residence, and laundry. Applications, with copies of testimonials, should be forwarded to the Secretary, St. Andrew's Hospital, Dollis Hill, London, N.W. 2.

The Royal National Hospital for

CONSUMPTION, Ventnor, Isle of Wight.—The services of a Locum Tenens, Male or Female, to act as ASSISTANT MEDICAL OFFICER, are required for a period of three months from the first week in August. Salary at the rate of £5 per week, with board and lodging in the Hospital and washing allowance provided. Reasonable railway expenses allowed. Please state essential particulars to the Secretary, R.N.H.C., 18, Buckingham street, Strand, W.C. 2.

St. Bartholomew's Hospital, Rochester

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12th July, 1917. S. OAKLEY, A.C.I.S., Secretary.

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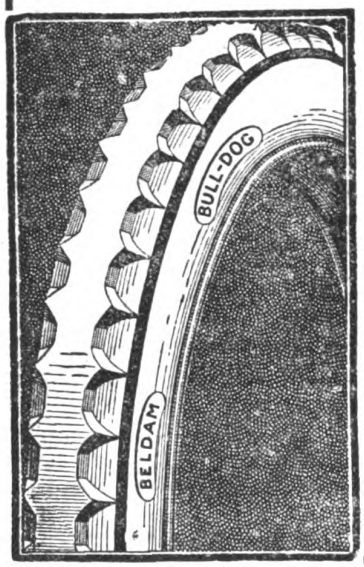
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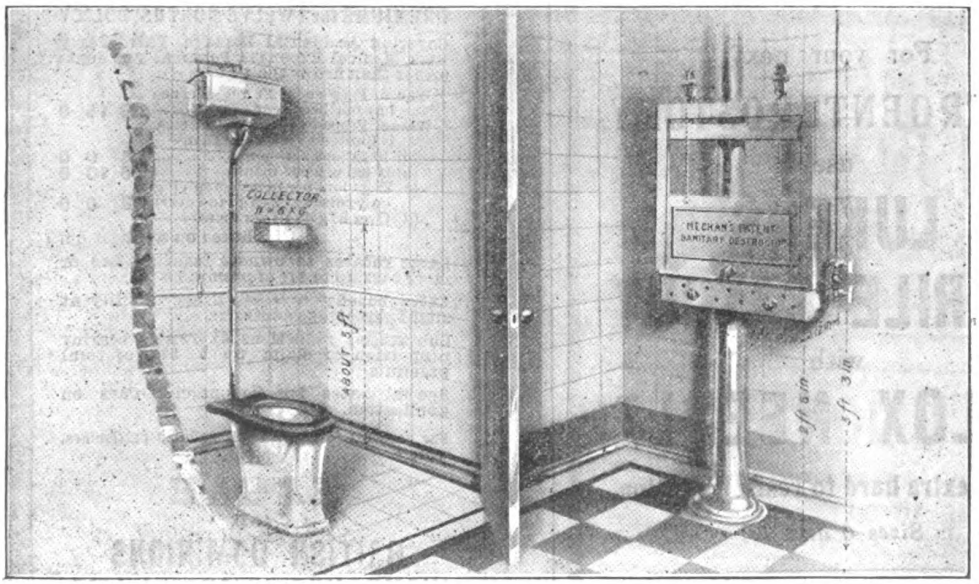
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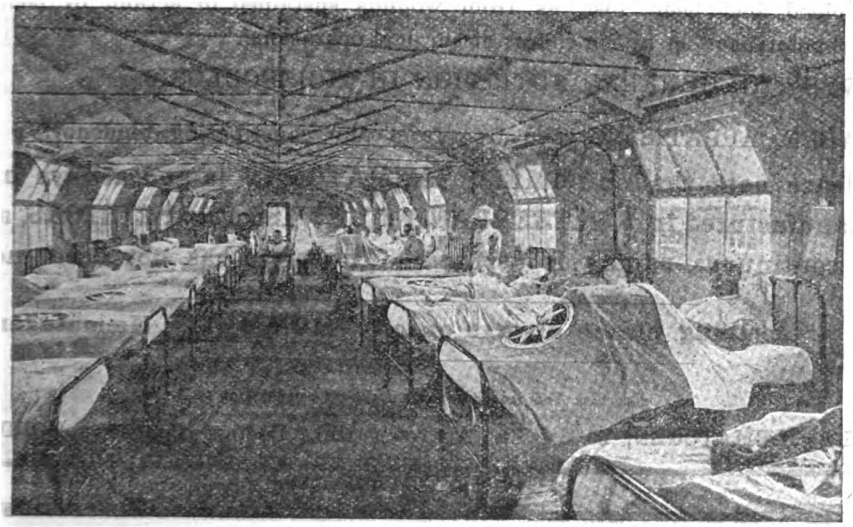
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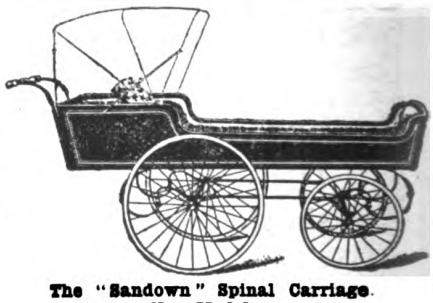
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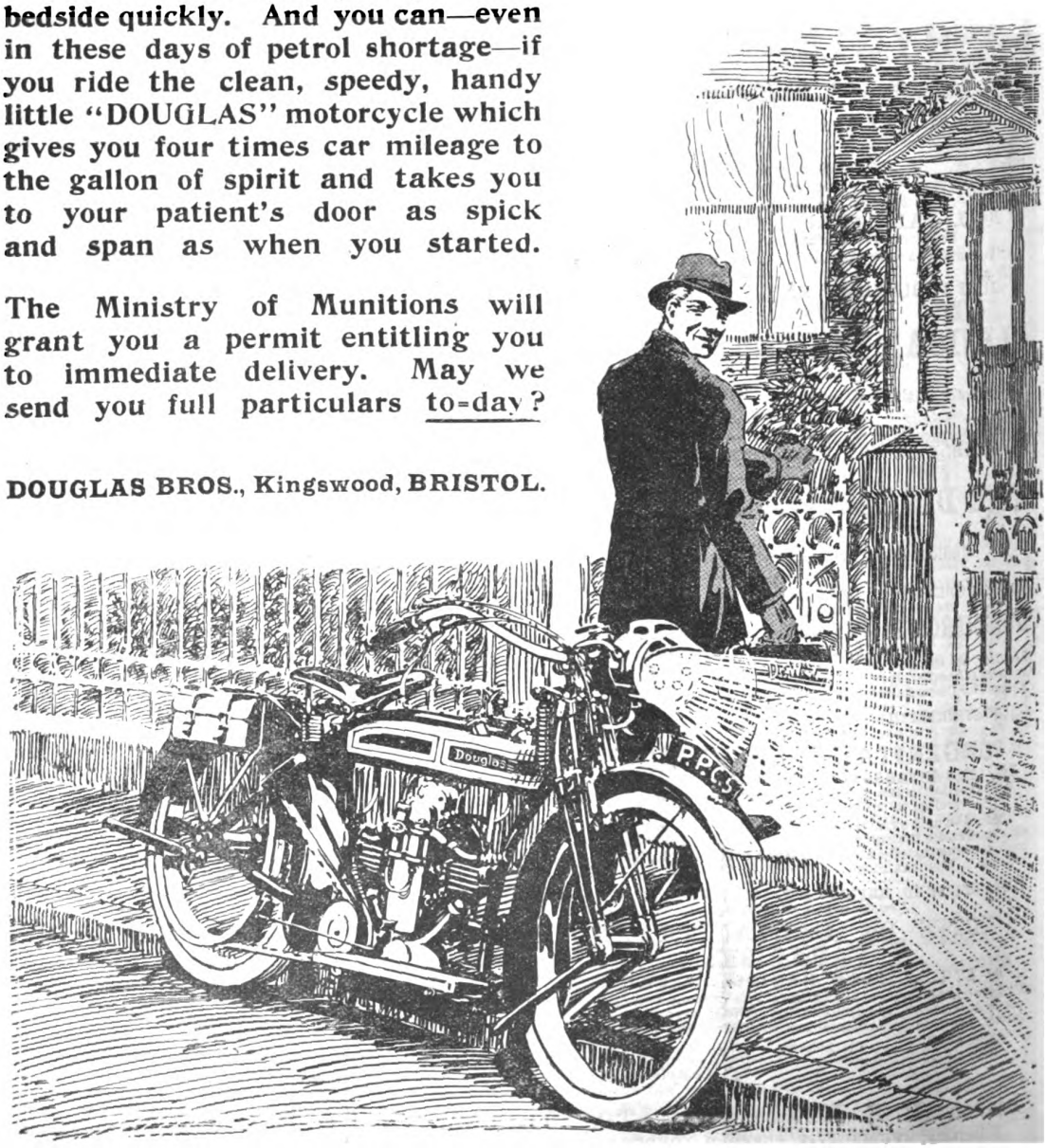
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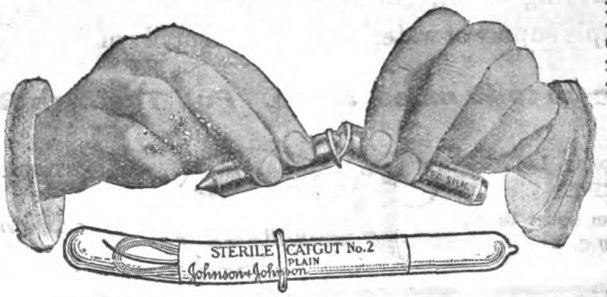
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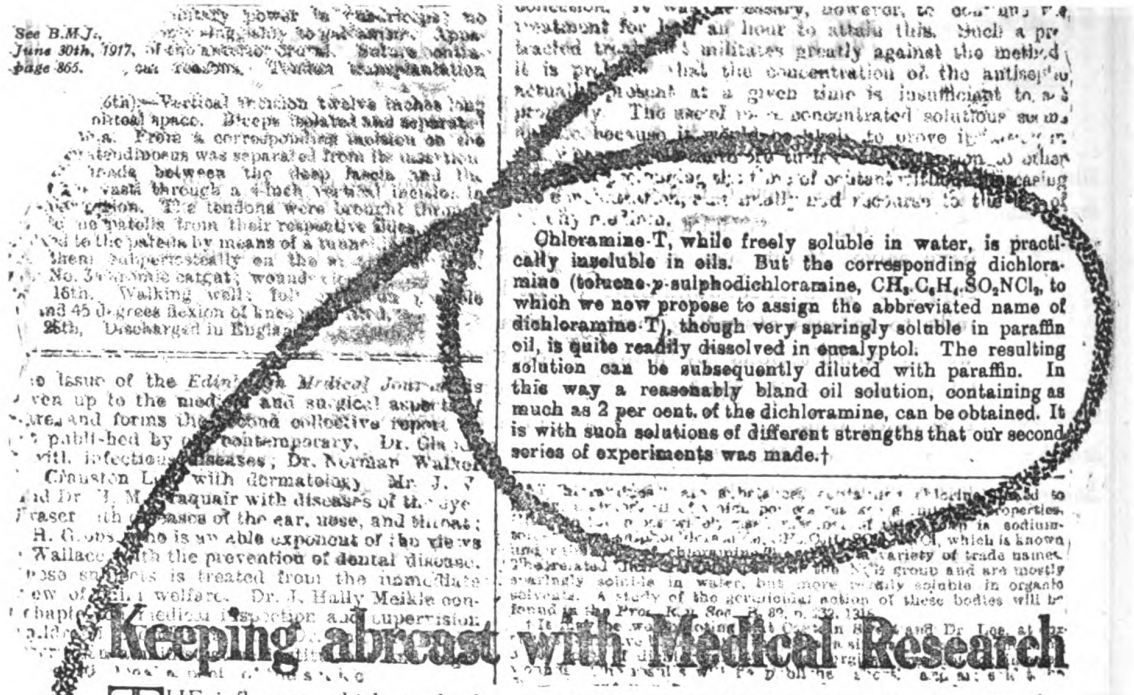
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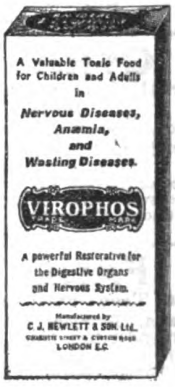
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"The results demonstrate conclusively the far greater diastasic value of your preparation, and enable me to state, without any qualification whatever, that 'MALTINE' far exceeds in diastasic power any of the preparations of malt which I have examined."

"Maltine" with Hypophosphites.

FORMULA: Each fluid ounce contains—

3	grains	Hypophosphite of	Lime.
3	"	"	Soda.
2	"	"	Iron.

Dose.—A dessertspoonful to a tablespoonful three times a day directly after meals. Children in proportion.

In this product the valueless and inert cane sugar syrup of the B.P. preparation is replaced by the highly nutritive and diastasic "MALTINE." The reconstructive effects of the chemical hypophosphites are thus notably reinforced by the vitalised organic cereal phosphates of the "MALTINE," while *pari passu* digestion is powerfully aided.

Indications.—Wherever the plain syrup is indicated "MALTINE" $\bar{c}$ HYPOPHOSPHITES may be substituted with great success.

The word "MALTINE" is our Trade Mark.

In prescribing kindly specify "MALTINE COMPANY."

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A Report
ON
THE PATHOLOGY, DIAGNOSIS, AND TREATMENT OF ABSOLUTE HYSTERICAL DEAFNESS IN SOLDIERS.

BY A. F. HURST, M.D. OXON., F.R.C.P.LOND.,
PHYSICIAN AND NEUROLOGIST TO GUY'S HOSPITAL, AND NEUROLOGIST TO R.V.H., NETLEY; TEMPORARY MAJOR, R.A.M.C.;
AND
E. A. PETERS, M.D. CAMB., F.R.C.S. ENG.,
SURGEON, ROYAL EAR HOSPITAL, AND AURAL SURGEON TO R.V.H., NETLEY; TEMPORARY CAPTAIN, R.A.M.C.

TWO CASES OF HYSTERICAL DEAFNESS CURED BY "OPERATION."

THE following case of hysterical deafness following shell shock was cured by "operation."

Lance-Corporal M., 26 years old, was blown up by a shell on August 29th, 1916. He became completely blind, deaf, and dumb, although he did not lose consciousness. His sight returned the following day. On reaching England he was able to read and write, and he talked in his sleep. In spite of treatment with encouragement, electricity, and etherisation, no further improvement occurred until one night in November, when he woke up and asked the sister for a drink. After this he was able to talk normally, but the deafness remained.

The patient was transferred to the Neurological Section at Netley on March 21st, 1917, seven months after the onset of deafness. He was found to be completely deaf both to air and bone conduction, though he could feel the vibration of a tuning-fork on his mastoid. A loud noise just behind his head caused a slight tremor of his hands, blinking and dilatation of the pupils, although he heard nothing; a slighter reaction was produced on the second and third occasion when the noise was repeated; after this it disappeared completely and did not return again.

The functional activity of the vestibular nerve and semicircular canals was then tested: the normal nystagmus and giddiness demonstrated that this system was unaffected. As our experience shows that organic disease or injury of sufficient intensity to produce severe cochlear deafness is invariably accompanied by loss of vestibular activity, we were assured that the internal ear was free from organic changes. This was rendered still more probable by the fact that immediately after the explosion the deafness was associated with mutism, which is always hysterical when it develops after shell shock. The patient was hypnotised by being made to stare at a lens for 15 seconds, but the deafness persisted; he could not be made to respond to any suggestion, as he was unable to hear; and a very loud noise produced no auditory motor reflex, the pupils as well as the eyelids remaining fixed.

The deafness also persisted during natural sleep, as it was found impossible to wake the patient by shouting "fire," and by banging a poker against a coal-scuttle within a few inches of his head, and no reflex contraction of his eyelids was observed. In the morning he had no recollection that anything unusual had occurred during the night. Suggestion with the aid of electricity, in which he had great belief, and attempts to re-educate the sense of hearing with various noises completely failed.

On April 16th he was told that if, in spite of the treatment he had had before and since admission, his hearing had not returned by the 20th we should have to do a small operation on his ear, which would be certain to cure him. As his hearing had not improved on the 20th he readily consented to the operation. Two small superficial incisions were made behind his ear under light etherisation and a suture was inserted. A loud noise was made during the "operation"; he heard it and jumped off the table. In the course of the next few minutes normal hearing returned in both ears to his intense delight, as he had recently become extremely depressed at the absence of any sign of improvement after seven and a half months. His hearing was accurately tested the next day, and it was found that it was perfectly normal both to air and bone conduction and the auditory motor reflexes had returned. He was discharged to duty three weeks later feeling perfectly fit. He visited the hospital on June 29th, a few days before he left for France. His hearing was normal and he was well in every way.

Another case of hysterical deafness following gun deafness was also cured by "operation."

Gunner F., aged 18, says he has been slightly deaf all his life. He became gradually deafer after gun practice whilst training in England until he could not hear at all, although he had never suffered from any definite concussion and had not served abroad. He was totally deaf to air and bone conduction, and it was impossible to wake him by the loudest noises when he was asleep. The deafness also persisted during deep hypnosis, so that he could not be made to respond to suggestion. The normal nystagmus and giddiness followed rotation, and he had a brisk auditory motor reflex both when awake and during sleep, but it was clear that this was not associated with hearing.

Ordinary persuasion, suggestion, and hypnotism having failed to produce any improvement after five months, he was advised to undergo an operation, which he was told would certainly cure him. He was given a little ether, and an incision was made behind his right ear, a plate of iron being continuously hammered at the same time. He jumped from the table in a half-drunken condition, hearing quite well, and said he must have had a dream, as he thought he had been deaf. The next day he said that he could hear better than he had ever done before. He was discharged to duty 10 days later. Two months later a report was received that his hearing remained good, he was doing his work well, and had applied for a commission.

Examination of his ears a week after the operation showed that he could only hear a 30-inch watch at 20 inches; the upper and lower limits of hearing were normal. Both drums were indrawn and showed evidence of chronic catarrh, which was doubtless the cause of his long-standing deafness. He was thus predisposed by chronic ear disease to gun-deafness, and the temporary deafness produced during gun practice was perpetuated and exaggerated by auto-suggestion. The true gun-deafness had disappeared spontaneously, so that when the total deafness resulting from suggestion was cured by suggestion in the form of an operation, his hearing returned to its original state.

ETIOLOGY.

The momentary deafness which is the natural result of the terrific noise caused by the explosion of a big shell in the immediate neighbourhood may make such an impression on the mind of a soldier that on coming to himself, whether he has actually lost consciousness or not, his first thought is for his hearing, especially if it was already impaired by preceding disease, and he may be so convinced that he is permanently deafened that he becomes actually deaf as a result of auto-suggestion.

The temporary deafness which occurs in gunners from the effect of the constant repetition of very loud noises may in the same way become perpetuated and exaggerated by auto-suggestion.

Lastly, organic deafness, especially if the onset is acute, as in that due to involvement of the auditory nerve trunk in cerebro-spinal fever, may remain complete after the disappearance of the active inflammation has been followed by restoration of some of the nerve fibres, so that a certain amount of hearing should have returned. This, again, is due to auto-suggestion, the final deafness being organic with a superadded hysterical element, which is capable of removal, like all hysterical symptoms, by suggestion.

DIAGNOSIS.

We have found it necessary to discard almost all the criteria formerly used in the diagnosis of organic deafness from deafness due to hysteria or malingering.

1. *History.*—Severe deafness following the explosion of a powerful shell is generally hysterical, though a lesser degree of organic deafness of a more or less permanent nature may be produced at the same time owing to rupture of the drum or hæmorrhage into the tympanum, which are often followed by infection of the middle ear, or to interference with the cochlear and vestibular systems probably due to infiltration-œdema or hæmorrhage into the labyrinth. It is doubtful whether absolute organic deafness ever results from hæmorrhage into the internal ear following shell shock, as no anatomical evidence of such an occurrence has yet been forthcoming. Deafness following an acute illness, especially cerebro-spinal fever, is, at any rate, always organic, but the deafness is in our experience frequently increased as a result of auto-suggestion, no functional improvement occurring when the anatomical condition improves.

2. *Bone and air conduction.*—We have employed the following quantitative tests.

(*a*) Watch test for air conduction. The distance a watch is heard (x) is expressed as a fraction of the distance at which it is heard by the normal ear (y): $\frac{x}{y}$.

(*b*) Modified Schwabach test for bone conduction. The base of a vibrating C tuning-fork is held to the base of the mastoid whilst the other hand curtains the meatus. The patient holds up his finger when the sound is no longer heard; the observer then transfers the tuning-fork to his own normal mastoid and notes the number of additional seconds during which he hears the fork.

These tests and comparison between bone and air conduction, as in Rinne's test, are, however, only of value in the slighter cases, as in many instances deafness is absolute and no hearing is possible whether the sound is conducted by bone or through the air. The vibration of a tuning-fork held on the mastoid process is often felt and the aerial vibration caused by very loud noises is often appreciated, even when no sound is heard.

3. *Auditory motor or jump reflex.*—A sudden noise normally causes an individual to jump and often to blink and the pupils dilate; the "jump," at any rate, is a protective reflex and represents the preparation for flight or fight. An officer whose left motor cortex had been almost completely destroyed went to *The Man who Stayed at Home* about four months after he was wounded. His right arm jumped violently when the gun-shot rang out on the stage, although no trace of voluntary movement returned until three months later. The efferent part of the reflex is thus subcortical.

In certain war neuroses of emotional origin in which the reflex is exaggerated jumping continues during sleep and deep hypnosis, although the patient does not hear the noise which induces it, even in a dream. The afferent part of the reflex is thus subcortical. That the reflex is quite independent of actual hearing is further shown by the fact that during deep hypnosis with the eyes open individuals in whom the reflex is normal or only slightly exaggerated do not always jump or blink, and the pupils do not dilate even when a poker is banged against a shovel within a foot of the ear, although they answer even whispered questions and obey whispered commands, and the cutaneous and tendon reflexes remain unaffected. Experiments on animals by Sherrington confirm these clinical observations and indicate that the auditory motor reflex is a function of the mid-brain.

A slight reflex was present in most of our cases of hysterical deafness, but it became less marked and sometimes disappeared completely or was confined to a slight dilatation of the pupil when the test was repeated. A very nervous but totally deaf mute remained completely unmoved, never jumping or showing a flicker of his eyelid during one of the severest thunderstorms we have known, and yet the next day he was completely cured by suggestion.

It is thus clear that the presence of the auditory motor reflex does not imply that hearing occurs, and a man who says he can hear nothing but shows a normal reflex is not necessarily a malingerer, but may be suffering from genuine hysterical deafness or even organic deafness due to a bilateral lesion of the cortical auditory centres.

4. *Persistence during sleep.*—As hysterical symptoms are due to suggestion, it might be expected that they would not persist during sleep, and Babinski regards this as a definite law. Our experience agrees with his with regard to all other hysterical symptoms which we have investigated, such as paralysis, contractures, and anæsthesia, and we have seen several deaf-mutes who talked in their sleep, but we have found that hysterical deafness, the behaviour of which during sleep does not appear to have been tested by Babinski, is an exception. Thus, greatly to our surprise, we found it quite impossible to wake either of our two patients, who were suffering from total hysterical deafness, by shouting or by making other very loud noises within a foot of their heads. We convinced ourselves that deception was impossible, and the hysterical nature of the deafness in both cases was at a later date conclusively proved by their instantaneous recovery with powerful suggestion. In one patient a slight twitch of the eyelids was sometimes observed with a particularly loud noise, but not in the other. It seems probable that a malingerer could be detected by this test, as he would certainly wake if a loud noise was made when he was asleep, whereas in hysterical and organic deafness waking does not follow.

5. *Effect of hypnosis.*—We had expected that hearing would return in hysterical cases during hypnosis, but we found it quite impossible to make the patients obey any command or show any signs of hearing, and no reflex was produced, although both were deeply hypnotised on several occasions. The synapses thus appear to remain unswitched during hypnosis as they do during sleep.

6. *Change in the voice.*—It is difficult to understand why there should be any difference in the effect on the voice of total organic deafness and total hysterical deafness, as the change is simply a result of the patient's inability to hear his own voice. It is, however, a fact that we could not observe anything abnormal about the speech in any of our hysterical cases.

7. *Vestibular reaction.*—We have found that the only test upon which absolute reliance can be placed in the diagnosis of hysterical deafness from organic deafness is the presence of normal vestibular reactions in the former and their loss in the latter. The vestibular reactions are entirely beyond the control of the will, and it is therefore inconceivable that they should disappear as a result of suggestion. As hysterical symptoms are always caused by suggestion, the vestibular reactions must remain unaffected in hysterical deafness. This test has proved of great value in cases of total deafness. But it must be remembered that in partial organic deafness the vestibular reactions are lost in the severer cases and exaggerated in the slighter cases, and the organic deafness may be accompanied and exaggerated by the simultaneous presence of hysterical deafness, which it is quite impossible to recognise except by the improvement which follows treatment by suggestion. The vestibular reactions may be investigated by the rotation, caloric, or electric tests, in all of which nystagmus and giddiness occur in normal individuals, but not if the vestibular nerves are involved. We have employed the rotation test for our cases, the patient being tied into an arm-chair, which is rotated ten times in 10 seconds.

PATHOGENESIS.

Hearing necessitates listening. Inattention during a dull sermon results in total deafness to the sermon, and in hysterical deafness the patient is so convinced that he cannot hear that he does not listen. Although the sound vibrations reach the ear in the normal way, they do not give rise to the slightest auditory sensation because of this inattention. The synapses at one or more of the cell stations in the auditory path to the cerebral cortex must, therefore, be unswitched, probably as a result of retraction of the dendrons. In absolute hysterical deafness the auditory motor reflex, which is a function of the mid-brain, may be abolished or greatly diminished. One of the unswitched synapses must, therefore, be below the mid-brain and either in the auditory nucleus or less probably in one of the intermediate cell stations—the superior olive or the nucleus of the lateral fillet.

The persistence of the deafness during hypnosis and natural sleep shows that during the prolonged inattention of hysterical deafness which has lasted for a considerable period the unswitching of the synapses is more profound than that which normally occurs during deep sleep, in which the synapses can always be forced by a loud noise.

TREATMENT.

Deaf-mutism.

Uncomplicated deafness is the most difficult of all hysterical symptoms to treat; mutism is one of the easiest. It is therefore fortunate that most cases of hysterical deafness are associated with mutism, as the return of speech in a deaf-mute generally convinces him that he can also hear, especially if he has been told that this will be the case. He listens as soon as he finds he can speak, and the unswitched synapses are once more switched on.

Among the numerous cases of deaf-mutism observed by one of us (A. F. H.) rapid recovery always occurred, sometimes spontaneously as a result of various accidental circumstances and sometimes as a result of various methods of treatment. One man was sleeping when his parents came to visit him a fortnight after he had become dumb as a result of shell-shock. They woke him up, and he at once said, "Hullo,

mother." Another recovered after a cold douche as he was getting out of a hot bath. The majority of deaf-mutes who required treatment were cured by the introduction of an intralaryngeal electrode, generally before the current was switched on, after having been told that this would cure them at once. With the aid of vigorous persuasion this method of suggestion is nearly always effective. At least one man has recovered when drunk and numerous others under anæsthesia. Sufficient ether should be given to make the patient excited, and vigorous suggestion and persuasion must then be used until the patient has completely regained consciousness.

Uncomplicated Deafness.

We have only seen two cases of absolute hysterical deafness without mutism, and in one of them mutism was originally present, but spontaneous recovery had occurred some months earlier. Both cases had had various forms of treatment before we saw them. Simple encouragement and the promise of recovery had proved unavailing, and when we repeated the promise to a man who was still completely deaf after eight months, he not unnaturally received our promise with considerable scepticism. We tried the effect of making very loud noises of different kinds near the patients' ears in the hope that they might break through the resistance, and that when they were heard, re-education with other sounds could be begun. But this method, which is sometimes successful in the partially deaf, was unavailing, as the deafness was absolute, and no noise, however loud, was heard. On many occasions the patients themselves shouted as loudly as they could through the chest-piece of a binaural stethoscope, the ear-piece of which was in their own ears, and at other times the chest-piece was put on an iron plate, which was then hammered, but they heard nothing. Etherisation had been tried without success before we saw them. Various forms of suggestion were tried; one patient had a great belief in electricity, but although we encouraged him to believe it would cure him, it had no effect. Both patients were hypnotised on a number of occasions without difficulty, but this proved useless, as the deafness persisted, and they could not be made to obey any commands which other hypnotised individuals obey immediately, so that suggestions of recovery which are effective in patients suffering from incomplete hysterical deafness naturally gave no result; other loud noises and familiar tunes from a gramophone placed in contact with the ear during hypnosis had no more effect than shouting, and as the deafness persisted during sleep it was impossible to cure the patients by suddenly exciting them during the night.

As all treatment had failed, we told the more intelligent of the two patients that if he did not get well in the next week we would be compelled to advise him to undergo an operation, which we had wished to avoid, but which was quite certain to cure him. He was no better at the end of the week, and was eager to have the operation. He was given enough ether to make him excited, and two small cuts were then made behind his ear; a hammer was banged on a sheet of iron during the "operation," and the moment after the incision had been made the patient jumped off the table with his hearing restored. The other patient was unwilling at first to undergo an operation, but finally consented, as he was naturally impressed by the recovery of the first patient, who was in the same ward and had been deaf for a much longer period. The same "operation" was performed and complete recovery occurred in exactly the same way. The joy shown by both patients on their recovery whilst in the theatre, and on return to the ward was so obviously genuine that there could be no possible question about the genuineness of the deafness; at one time we had been rather doubtful about the second patient, but fuller investigation had convinced us more than a fortnight before that he was not malingering.

CONCLUSIONS.

We are convinced from our experience in these cases that absolute deafness associated with normal vestibular reactions should be regarded as hysterical, and when simple encouragement fails, as will generally be the case if the patient is not also dumb, an "operation" should be performed in the way we have described, after the patient has been made to feel quite confident that it will restore his hearing.

A Comparative Study

OF

THE REACTIONS TO HUMAN AND BOVINE TUBERCULIN APPLIED BY THE METHOD OF VON PIRQUET

IN CASES OF TUBERCULOUS DISEASE OF THE BONES AND JOINTS.[1]

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THE work here reported was done for the Local Government Board concurrently with their investigation into the types of tubercle bacilli occurring in tuberculous bones or joints.[2]

In aid of the latter inquiry I sent for examination in the Board's Pathological Laboratory material from abscesses or sinuses occurring in 116 children[3] who were affected with tuberculous bone or joint disease and were patients in the Lord Mayor Treloar Cripples' Hospital at Alton. In discussions which I had with the Board's pathologists, Dr. A. Eastwood and Dr. F. Griffith, it occurred to us that, having these cases under observation, it would be a matter of interest and some practical importance to undertake a quantitative investigation of the von Pirquet cutaneous test on such of these patients as were available, to check the reactions by colour photographs and to endeavour to ascertain:—

1. Whether the reaction to cutaneous inoculations of tuberculin was constantly present in patients suffering from undoubted tuberculous lesions of the bones or joints—that is, in patients from whose lesions the tubercle bacilli had been isolated.
2. If not constantly present, under what circumstances the reaction would not appear.
3. Whether by using both human and bovine tuberculin for the von Pirquet test it would be possible to ascertain, from the reaction which followed, whether the patient was suffering from tuberculosis of human or bovine origin.
4. Whether the degree of reaction gave any indication of the severity of infection.
5. The extent and nature of the reaction.

These suggestions were submitted to the Board and received their approval. Accordingly, with the aid of a grant from them, I carried out the proposed work during the autumn of 1914, with the assistance of Mrs. Gauvain, who took colour photographs of the reactions obtained.

I applied the von Pirquet test to 80 out of the above 116 cases. In order to avoid any risk of unconscious bias I made the inoculations and recorded their results without knowledge of bacteriological reports as to the type of bacillus found.

The tuberculins employed were Koch's "old tuberculin," prepared from the "human" type of bacilli, and his tuberculin prepared in identical way from bacilli of bovine origin. These were supplied by Messrs. Meister, Lucius, and Bruning, of 3, Jewry-street, E.C., who certified as to their purity and efficiency.

Technique of Operation and Precautions Employed.

The tuberculins were applied to suitable skin scarifications in dilutions of 1/64, 1/16, 1/4, and in full strength, each in approximately equal bulk and controlled by inoculation of a scarification with the same quantity of sterile normal saline solution.

In the majority of cases the scarifications were made on the anterior surfaces of both thighs; where the legs were not available both arms were used. In every case a minimum distance of at least two inches existed between

[1] With the aid of a grant from the Local Government Board.

[2] A. Eastwood and F. Griffith: "The Characteristics of Tubercle Bacilli in Human Bone and Joint Tuberculosis," Journal of Hygiene, vol. xii., No. 2, Jan. 14th, 1916.

[3] In 11 of these cases tubercle bacilli were not obtained in culture; of the rest, 70 yielded bacilli of "human type," 32 "bovine" bacilli, and 3 atypical strains of tubercle bacilli.

any one scarification and its nearest fellow, so that adjacent reactions should not become confluent.

To minimise the possibility of tuberculin applied to one scarification being conveyed by the lymphatic channels to a neighbouring scarification which had been treated with a weaker solution of tuberculin the solutions, commencing with the control, were applied to the scarifications in order of increasing strength from the distal to the proximal extremity of each limb.

Human tuberculin was always applied to scarifications on the right side of the body and bovine tuberculin to scarifications on the left side.

To ensure the scarifications being as nearly as possible equal, the same von Pirquet scarifier, supplied by Messrs. Allen and Hanburys, was in every case used. This instrument may be quickly and conveniently sterilised by passing through the flame.

The control solution and the tuberculins were all applied to the scarification marks with sterile glass eye-rods of the same size, a separate rod being kept in each bottle. In this way approximately the same quantity of liquid was applied to the centre of each scar. The solution was simply placed on the scar, not rubbed in.

The bottles containing the solutions of tuberculin were all placed on one tray in ascending order of strength. On the right-hand side of the tray was the human tuberculin, on the left the bovine. In the middle was the bottle containing the control solution. The bottles had distinguishing coloured labels as a further safeguard against the possibility of introducing the wrong solution into the various scarifications.

The test was conducted as follows:—

The scarifier was first sterilised in the flame and the skin over the area on both limbs to be scarified cleansed with ether. The tip of the scarifier was then placed on the skin, the instrument being held vertically, and the scarification was performed by the exercise of firm but gentle pressure while rotating the scarifier between the finger and thumb about half-a-dozen times. The outer layer of the skin over a minute circular area was thus removed and the vascular subcuticular layer brought to view. It was found quite unnecessary to continue the pressure long enough to cause any bleeding.

The five scarifications were thus rapidly made on each of the two selected limbs at approximately the same level on both sides and in the same situation. The control saline was then applied to each of the most distal scarifications, the human tuberculin in increasing strength to the succeeding scarifications up the right side, the bovine similarly up the left. The limbs were kept uncovered until the liquid applied had dried. No dressing was employed, and the limbs, when dry, were simply covered with bedclothes in the ordinary way.

Local Reactions.

In no case did either variety of tuberculin fail to react. The degree and extent of the reaction varied within wide limits, and its persistence was also variable; but the response of every case to both tuberculins was particularly noteworthy. In the majority of cases reaction was clearly visible within 24 hours, and often could be observed within 12 hours. It usually reached its maximum at between 36 and 48 hours, and then gradually faded. Frequently the reaction of the quarter and full strength tuberculins remained well marked for a week or longer. In exceptional cases the reaction persisted for a month or more, and in one case (E. M., No. 89) who was inoculated on Nov. 26th, 1914, the reaction was still clearly visible on March 11th, 1915.

In each case the controls were negative. After two or three days the scars which had received the control solution became invisible, except on close search.

At this period, even when no definite reaction could be distinguished in the scarifications treated with the lower two dilutions of the tuberculin, the scars made would usually persist. Sometimes, though no colour change round these scars could be seen, passage of the finger over the scars gave the sensation of a small but definite papule depressed in the centre.

In patients not the subject of tuberculous disease this retardation of healing of the scar, to which diluted tuberculin had been applied, did not appear to exist. This observation was only made on a few subjects, as suitable non-tuberculous subjects of the age of the patients tested were not readily available. If, however, this observation stands the test of further investigation it would afford the suggestion that delayed healing in a scar to which diluted tuberculin had been applied, even in the absence of colour change and without palpable raising of the edge of the scar, is in itself evidence of a minimum degree of a positive reaction to the von Pirquet test.

Next in order of intensity were the reactions where there appeared a circumferential reddening of the skin about the crateriform depression made by the scarifier; this reddening varied from the merest line in some cases to a total circumference of about an inch or more in others. The outer edge of this area was quite distinct and the colour was of almost equal intensity, though perhaps not quite so marked at the periphery. The shape was sometimes irregular, but more usually circular or somewhat oval.

In reactions of greater severity than the last an outer halo of faintly red discolouration was distinctly visible, much less intense than the inner red area and of varying size, though rarely extending for more than a quarter of an inch from the central denser area, except where it tapered out into a filamentous projection or projections which marked the radiation of a lymphatic channel.

Finally, when the reaction was most intense the marked red area immediately about the scar became paler and more livid adjacent to the crater and sometimes assumed a purplish hue. This appearance marked the maximum reaction noted. It was characterised by four distinct zones—a depressed scar in the centre, bordering this a livid pink or purplish zone, surrounding the latter a well-marked zone of intense redness, and, embracing the last, a faintly pinkish area, the outer limit of which was indefinite and merged into the surrounding skin, being sometimes prolonged for a shorter or longer distance into radiating lymphatics.

As was to be expected, the degree of reaction generally varied with the strength of solution of tuberculin, stronger solutions provoking a more intense reaction than weaker. In some cases, however, particularly when inoculations were made on the thighs, the difference between reactions of a quarter and full strength were not marked, and occasionally the quarter strength solution appeared to cause a more intense reaction than the full strength. This may possibly be partly accounted for by accidental inequality in the degree of scarification. It was found that on approaching the groin the skin was less tense and rested on a less firm foundation than on the middle region of the thigh. With equal pressure the scar made by the scarifier in the groin region did not penetrate so deeply in the looser skin as the scar made on the firmer skin in the middle of the thigh.

Hence it is conceivably possible that a weaker solution of tuberculin inoculated into the skin of the middle of the thigh might cause a greater reaction than a stronger solution inoculated into the skin of the groin.

General Reaction.

To ascertain if any general reaction followed the employment of this test the temperature in each of the cases investigated was taken every two hours for the first 48 hours and every four hours for the succeeding 48 hours; subsequently the usual morning and evening temperatures were alone taken, unless for any reason it was found desirable to take the temperature more frequently. Subjective symptoms were also very carefully noted.

In the great majority of cases, except for a fractional rise of temperature, there was no evidence of any general reaction whatever. Often not even a slight rise of temperature was observed.[4]

In six cases only did the temperature rise up to or above 100° F. where the raised temperature could be ascribed to the test. This rise was always on the day succeeding the inoculation. In three of these cases the patients complained of headache and general malaise. These symptoms always rapidly disappeared, and in only one case did the headache persist throughout the day following the inoculation.

General reaction, when present, was only noticeable on the day succeeding the application of the test.

In one (R. T., No. 74) of these six the temperature rose to 100° F. on the afternoon succeeding the day of inoculation, and the patient complained of slight headache.

In another case (N. R., No. 80) the temperature rose to 101·4° F. on the afternoon following the day of inoculation. Patient looked flushed, complained of headache, and vomited undigested food once.

In the case where the general reaction was most marked (M. B., No. 9) the test was applied at 7 P.M. on August 26th,

[4] Care was taken, where possible, to test only apyrexial patients. In very few cases was there any pyrexia due to complicating sepsis or other cause.

1914. The next morning the patient looked ill, the eyes were sunken, face drawn and flushed, and the child was very quiet. There was slight erythema on the chest, abdomen, and back; the temperature was 100·5° F., and the patient complained of feeling ill and having headache. At 3 P.M. the temperature was 103·4°, cheeks more flushed, headache intense, and patient drowsy. In the evening the temperature went down, the headache was relieved, and the rash disappeared. The patient slept well at night, and the next morning he was bright, lively, with no headache and no discomfort; his temperature was normal and he appeared quite well.

In this patient the local reaction was more intense than in any of the others in the whole series. He was a fair-skinned, red-haired boy. It is probable that these symptoms were not the result of the test but due to other and unascertained causes. This was the only case in which the general reaction could be called severe.

In the remaining three cases a temperature rising to 100° F. was alone noted. In no case did the general reaction extend beyond the day following the inoculation.

It should be remembered that the patients tested were children and not able to describe symptoms clearly; but they were kept in bed under close observation, and no evidence could be found of general reaction more intense than stated above.

In no cases were any ill-effects observed other than the transient ones exceptionally occurring and already recorded, and these apparently need not be anticipated if not commencing within 24 hours of the inoculation.

Local Reactions to Human and Bovine Tuberculin.

The local reactions to human and bovine tuberculin were found to be essentially similar, and, without the knowledge that the one tuberculin was always inoculated on the right side and the other on the left, it would have been impossible to decide whether any one reaction was due to human or bovine tuberculin.

While variations in the degree of the local reactions between one patient and another were frequently marked, it was the exception to find considerable variation in degree between the reactions to human and bovine tuberculin in any one patient. Out of the 80 cases investigated in 23 the reactions to human and bovine tuberculin were so nearly equal that it was impossible to decide which was the greater. In 21 cases the reaction to human tuberculin was slightly greater than to bovine. In 25 cases the reaction to bovine tuberculin was slightly more marked than to human. In four cases the reaction to human tuberculin was markedly greater than to bovine. In seven cases the bovine reaction was markedly greater than the human. (See Table.)

Comparison of Results obtained by Von Pirquet Test with Bacteriological Findings.

Reactions.	No. of cases.	Bacteriological findings.			
		Human.	Bovine.	Atypical.	Negative
Approximately equal	23	16	5	1	1
Slightly greater to human tuberculin	21	13	8	—	—
Slightly greater to bovine tuberculin	25	14	6	1	4
Markedly greater to human tuberculin	4	2	1	—	1
Markedly greater to bovine tuberculin	7	5	2	—	—
Totals	80	50	22	2	6

Relation of Degree of Reaction and Severity of Disease.

No definite relationship could be established between the degree of the reaction and the severity of the disease.

Thus, G. D., No. 1, suffering from severe dorso-lumbar caries with sinuses, reacted but feebly, while L. G., No. 60, suffering from an approximately similar condition, reacted well.

G. L., No. 50, suffering from very severe tuberculous disease of both hip-joints, with a sinus in connexion with the right hip, reacted very feebly; but M. B., No. 9, suffering from similar lesions of almost equal severity, reacted intensely.

Again, G. P., No. 58, suffering from tuberculous disease of the knee-joint of moderate severity, reacted well; but H. M., No. 62, suffering from a similar but much more severe lesion, reacted feebly. And similarly with other cases.

I have formed the impression that patients who are weakly and cachectic, irrespective of the severity of the local lesions, tend to react feebly, whereas patients who are strong and vigorous, whether their local lesions be severe or slight, may show either an intense or mild reaction to the von Pirquet test.

Progressive disappearance of the reaction from the 1/64 scar upwards did not indicate diminished activity of the disease. No guide to prognosis could be found by comparing the reactions produced by the weaker and the stronger applications of tuberculin in the same patient.

Since this investigation was undertaken a sufficient interval has elapsed to estimate with some degree of accuracy the prognostic value of the quantitative von Pirquet test. As might be anticipated, the weakly and cachectic patients have not made such substantial or rapid progress towards recovery as the strong and vigorous ones. Yet the reactions obtained in the latter were more intense than those in the former. Where weak solutions as well as concentrated solutions give marked reactions the only inference which I could draw was that the patient had abundant reacting power.

One of the most marked reactions to all strengths of tuberculin, both human and bovine, occurred in a strong, vigorous, and well-nourished girl apparently in robust health but with a bad tuberculous family history, and who had been long exposed to danger of infection. In this patient I could detect no clinical or radiographic evidence of disease, though, doubtless, she was infected.

On the other hand, patients with severe lesions with progressive disease often reacted feebly. The reaction to inoculation was therefore rather a measure of the degree of resistance of the patient than of the severity of the infection.

Results of Investigation.

The final result of the investigation may be stated briefly as follows:—

1. Local reactions to inoculations of both human and bovine tuberculin were invariably present in all patients from whose pus tubercle bacilli had been isolated.
2. Though reactions were invariably present the degree of reaction varied within wide limits.
3. Weakly and cachectic patients usually reacted feebly, quite irrespective of differences in the severity of their local lesions.
4. Strong and vigorous patients exhibited wide differences in the degree of their reactions, irrespective of differences in the extent or the severity of their local lesions.
5. The quantitative von Pirquet test was not found to be of value in forming an estimate of the severity of the infection, and was of little prognostic value.
6. It was impossible to differentiate the type of tubercle bacillus with which the patient was attacked by the nature of the reaction to the tuberculin employed.

To the Honorary Medical Board of this hospital I wish to record my thanks for so readily consenting to this investigation being undertaken, and for much encouragement given and interest displayed in the progress of the research.

I desire to express my grateful thanks for invaluable assistance afforded by Dr. Eastwood, both in suggesting the most useful lines on which this investigation should proceed and in giving material and helpful criticism on the interpretation of the observations made. To my wife I am also deeply indebted for the colour photographs she took of the reactions produced, which form a permanent record of great value and afforded a useful check and supplement to direct observations made at the bedside.

A SERVICE OF MUNICIPAL MIDWIVES FOR CHELMSFORD.—In consequence of having to look after the practices of colleagues on war service the remaining doctors in Chelmsford have notified to the medical officer of health their inability to attend maternity cases. The circumstances were brought before the town council by the medical officer of health as a matter of urgency, and attention was drawn to the difficulties likely to arise in the town with its annual total of births between 400 and 500. Only three certified midwives are working in the borough, and the remaining medical men suggested that the difficulty should be solved by the appointment on the part of the council of two certified midwives to assist the local medical service. The Local Government Board had assented to the suggestion and agreed to pay one-half of the cost incurred by the council. After discussion *in camerâ* the council authorised the medical officer of health to select two midwives at a minimum salary of £75 each, on the understanding that the arrangement was to last only for the duration of the war and three months after.

THE NEW DIETETIC TREATMENT OF DIABETES.[1]

BY P. J. CAMMIDGE, M.D. LOND.

Treatment by Fasting.

IT is now many years since it was first suggested that patients suffering from severe diabetes should be starved until their urine became sugar-free, but the suggestion was not generally adopted, as it was found that an alarming increase in the excretion of acetone bodies often occurred when the fasting had proceeded for a short time. Acting on the experience gained with animals rendered more or less diabetic by partial removal of the pancreas, Allen gave a further trial to the method and found that, in the majority of cases, the acidosis which is apt to develop during the first few days of starvation subsides afterwards if the fasting is persevered with. As a result he formulated a plan of treatment which may be summarised briefly as follows:—

1. A preliminary fast is given until the urine is free from sugar.
2. When it has been sugar-free for 24 hours carbohydrate food is allowed in gradually increasing amounts, starting with green vegetables.
3. Coincident with the addition of carbohydrate, or in place of it if the carbohydrate tolerance is very low, protein is introduced into the diet, in small but gradually increasing quantities, until glycosuria occurs, or a sufficient amount is being taken to cover the basal requirement of the patient.
4. Fat is added to the diet in small quantities during the time the carbohydrate and protein tolerance are being tested, and is subsequently increased more rapidly until the fuel requirements of the body are met, provided that glycosuria does not develop and there is no increase in the acidosis.
5. The appearance of sugar in the urine at any time is taken as an indication that a fast of sufficient length to cause a cessation of the glycosuria is necessary.
6. A diet containing not more than half the carbohydrate being taken at the time sugar appears is then continued with for some weeks. Later further additions are made very gradually.
7. At intervals, depending on the severity of the case, the patient fasts, or greatly restricts the whole level of his diet, for 24 hours.
8. Adult patients are not allowed to gain in weight, but a natural increase is allowed in children, although care is taken that the gain should not be in adipose tissue.
9. Active daily exercise, carried to the point of healthy fatigue, is insisted on in all cases if possible.

The details of the method necessarily vary somewhat according to the character of the case, as Allen himself has pointed out, although few of his disciples seem to be aware of the fact. I do not propose to consider them here, however, but shall devote my attention mainly to the metabolic changes produced by the treatment and its effect on different types of glycosuria.

Chronic Intestinal Catarrh.

Everyone who has had more than a very limited experience of the condition to which the name diabetes mellitus is generally applied cannot avoid coming to the conclusion that it occurs in a variety of forms, with the one symptom of glycosuria in common, but differing widely in other respects. This variation is even more marked when the blood, urine, and fæces of a number of cases are systematically investigated and compared. During the last few years I have had the opportunity of making analyses of some 8,000 specimens from over 500 cases of diabetes, including 54 whom I have treated by Allen's method. One of the most striking results of my investigations has been the frequency with which indications of a chronic catarrh of the upper part of the intestinal tract have been met with, such a condition being present in 71 per cent. of my cases. One can hardly assume that the relationship is accidental, or that the catarrh is a secondary phenomenon, for the history very frequently shows that heartburn, flatulency, and other symptoms of indigestion preceded the discovery of sugar in the urine, often by several years, while I have found that treatment directed to the intestinal condition frequently helps to control the glycosuria, whereas reappearance or accentuation of the catarrh may be followed by increase in the sugar excretion. Cases of this description generally respond well to alimentary rest, but they are liable to relapse unless the intestinal condition is considered in the subsequent treatment.

The fasting treatment is based on the assumption that impairment of the functions of the pancreas is the cause of glycosuria in all cases, and that the improvement in carbohydrate metabolism which results is due to the physiological rest given to the gland. Although this may be true to some extent in cases with a chronic intestinal catarrh, it is probable that the starvation also has an effect on the intestinal condition, and that this helps to control the glycosuria. It may be a de-intoxicating process, as Guelpa supposed, but as Lombroso has recently shown that the intestine yields a glycolytic agent to the blood even more readily than the pancreas, it is possible that the physiological rest may influence the production of this substance, and so improve the utilisation of sugar. At any rate, the analogy between the diabetes produced in animals by partial extirpation of the pancreas and in the human subject is probably not always as close as there has been a tendency to assume, since on the one hand we are dealing with a surgical mutilation of a non-progressive character, whereas on the other we have to treat a pathological state that tends to progress, and, even when checked, to recur.

I could quote a number of cases to illustrate the relationship between the condition of the intestine and the progress of diabetes, but one will suffice:—

A lady, 26 years of age, was sent to me at the beginning of August, 1916, with the history that a month before she had begun to feel thirsty and was easily tired. As the symptoms increased she saw her doctor, who found sugar in her urine, and wrote to me for an appointment. When she came I examined her blood and found 0·24 per cent. of sugar, while a specimen of urine she brought with her contained 6·2 per cent., giving a total excretion for the 24 hours of 124 gm. Later, on a test diet containing 3½ oz. of bread and with a total carbohydrate content of 70 gm., she passed 52 gm. of sugar in the 24 hours. The urine also contained 300 mg. of acetone bodies, but no oxybutyric acid, 760 mg. of ammonia nitrogen, 450 mg. of calcium, 230 mg. of magnesium, and showed a normal creatinine and uric acid excretion, and a normal nitrogen balance. There was a very marked reaction for indican, which worked out quantitatively at 128 mg. The fæces were dark brown in colour, rather soft in consistency, acid in reaction, and gave a very marked reaction for bilivérdin, but contained no occult blood. The trypsin index was slightly subnormal, 200 units, but there was no evidence of serious interference with fat digestion or absorption.

This patient was not starved, as the glycosuria and hyperglycæmia quickly cleared when the carbohydrate intake was limited, and means were taken to combat the intestinal condition. As the latter improved the diet was gradually increased, until ultimately 70 gm. of carbohydrate were again being taken, but without there being any sugar in the urine. The main interest of the case lies in the fact that the patient had consulted me two years previously for chronic indigestion, when there was no trace of glycosuria. Her urine then contained a marked excess of indican, 188 mg., there was a high iodine coefficient ("pancreatic reaction") of 248 units, and an abnormal amylolytic ferment index of 67 units. The fæces were at that time strongly acid in reaction, contained a considerable amount of unchanged bile pigment, and gave an abnormally high trypsin index of 5000 units. Quantitative analysis showed a relative excess of combined fatty acids and a very low proportion of neutral fat. There was evidently, then, very considerable catarrh of the upper part of the intestinal tract, with secondary catarrhal pancreatitis, and in a letter to the patient's doctor I pointed out the possibility of diabetes supervening if the condition progressed, as, unfortunately, it appears to have done. (Chart 1.)

Classification.

It is comparatively uncommon, in my experience, to find evidence in the urine and fæces of advanced cirrhosis of the pancreas in diabetics. As a rule a cirrhotic, or malignant, pancreas is associated with only traces of sugar, 5 gm., or less, in the 24 hours, and it is rare also to meet with acetone or signs of acidosis, even when, as occurs exceptionally, the sugar excretion rises to 50 or 100 gm. a day.

Signs of some interference with the digestive functions of the pancreas were found, however, in the majority of my cases (72 per cent.), and in most of them (67 per cent.) there were indications that the functions of the liver were also being imperfectly carried out. In some 27 per cent. the hepatic disturbance was apparently more pronounced than the pancreatic.

It is consequently convenient to recognise three types: (1) the pancreatic, (2) the hepatic, and (3) the pancreo-hepatic—a classification I find of considerable help in prognosis and treatment.

[1] A paper read before the Harvéian Society on April 19th, 1917.

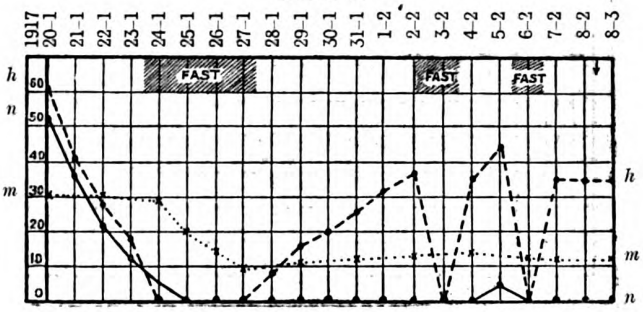
The outlook for patients with a cirrhotic pancreas is usually fairly good, provided that a suitable diet is arranged as soon as possible after the discovery of the disease. I have not found that they are materially benefited by the starvation treatment, and, as their digestive powers for all three classes of foodstuffs are deficient, the indications are rather to ensure sufficient nourishment than to worry unduly over the comparatively unimportant defect in carbohydrate metabolism.

Strictly speaking, the true hepatic type does not come under the heading of diabetes, for, although the urine reduces Fehling and Benedict's solution, &c., and gives an osazone with phenylhydrazine similar to that of dextrose, this is not due to the presence of a sugar, but to an alphaketonic acid to which I have given the name "iso-glucuronic acid," although it is more convenient to refer to it as pseudo-lævulose, since, like lævulose, it is lævorotatory. Pseudo-lævulose is met with in the urine of most advanced cases of diabetes, along with dextrose, especially if the diet contains much protein, for it is from protein that it is probably derived, but it may also occur alone and lead to an incorrect diagnosis of diabetes. To treat such cases on orthodox lines may do more harm than good. The ordinary carbohydrate-free diet only makes matters worse, and, although starvation will clear the urine of reducing substances, the same result may be obtained, with much greater comfort to the patient, by eliminating, or strictly limiting, the protein in the diet and giving an abundance of vegetables, with dextrinised starches, in the form of oatmeal, potato, &c., or pure dextrose. Under this treatment the urine rapidly becomes normal, and after a few weeks the patient can gradually resume his ordinary food, provided that protein is taken sparingly. So far as I can see at present the prognosis seems to be good, for I have several patients who have remained sugar-free and in excellent health for three or four years. It seems probable that some of the success of the various carbohydrate "cures" for diabetes is to be explained by cases of this kind.

The Pancreo-Hepatic Type: "Gouty" Glycosuria.

In what I have termed the pancreo-hepatic type there may, or may not, be evidence of intestinal catarrh at the time they come under observation, but they always show signs of pancreatic insufficiency and more or less disturbance of the functions of the liver, most likely the result of an infection from the intestine by way of the ducts or lymphatics. The relative importance of the two conditions varies considerably, and they merge into the pancreatic type in the one direction and into the hepatic on the other. There is a corresponding difference in the probable course of the case and the form of treatment most likely to be of benefit. The prognosis is most hopeful when hepatic insufficiency is the more prominent feature, such cases corresponding to what has been termed "gouty glycosuria." Typical attacks of gout are very rarely seen, however, but they are specially liable to what are termed "gouty" complications in the shape of cardio-vascular or kidney disturbances, neuralgia, and neuritis, the last two being the most common and severe. In reality these complications are dependent on the hyperglycæmia, for they persist so long as there is an excess of sugar in the blood. It is important to remember in this connexion that the disappearance of sugar from the urine does not necessarily imply a normal blood-sugar content; in fact, it is the rule for the hyperglycæmia to continue after the urine is sugar-free, so that if reliance is placed on analysis of the urine alone anti-diabetic treatment may apparently fail to control the symptoms.

CHART 2.

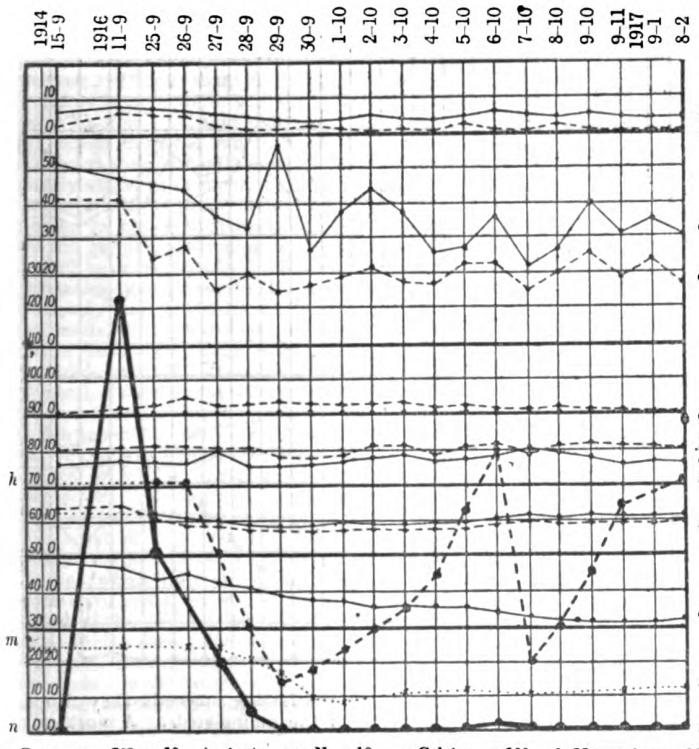


Pseudo-lævulose is generally present in these cases, sometimes constituting more than half the total sugar. Systematic examination of the urine usually shows, in addition, striking variations in the excretion of uric acid and creatinine, which moves in curves with several days' or weeks' interval between the crest and trough of the waves. Amino-acids are frequently present in considerable excess, and an abnormal output of urobilin is a common feature. The fæces may have the characters associated with catarrh of the upper intestine, but it is more common to find signs of chronic colitis.

In some a short period of starvation is helpful, but I have obtained the best results by merely limiting the carbohydrate and protein for several days, then giving one or two vegetable days, followed occasionally by a porridge or potato day. The subsequent diet is arranged according to the patient's tolerance for carbohydrate and protein, determined by regular blood and urine analyses. In many instances an alternating diet, arranged so as to control the pancreatic and hepatic insufficiency in turn, is the most satisfactory.

Typical "gouty" glycosuria is most common after middle life, but even in younger people a predominance of the signs of hepatic insufficiency warrants a more cheerful outlook than when they are absent. The tendency for the hyperglycæmia to persist after the disappearance of the glycosuria should be borne in mind if the treatment is to be really satisfactory, however.

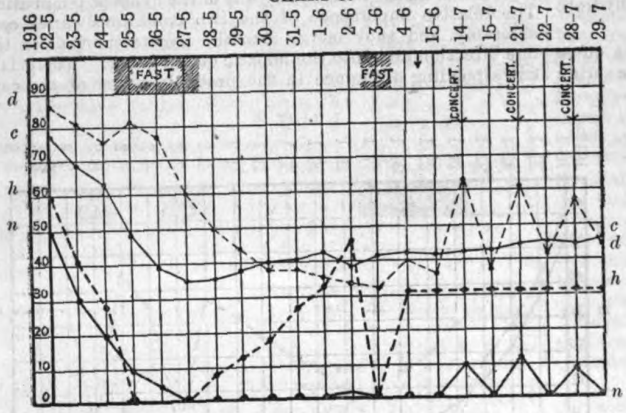
CHART 1.



a, True amm. N. × 10. *b*, Amino ac. N. × 10. *c*, Calcium × 100. *d*, Magnesium × 100. *e* (dotted), Acetone × 10. *e'* (continuous), Oxybuty. ac. × 10. *f*, Creatinine × 10. *g*, Uric acid × 10. *h*, Food carbohyd. *j*, Tot. ur. N. *k*, Food N. *l*, Indican × 100. *m*, Blood sugar × 100. *n*, Urinary sugar.

I have recently had under my care a case of this type in a young woman of 28 who had been twice treated by alimentary rest by different physicians with apparently satisfactory results at the time, but on each occasion sugar reappeared in her urine within a short period of her return home. I found that, as on previous trials, the urine became sugar-free after two days' starvation, but examination of her blood showed that it contained 0·2 per cent. of sugar, as compared with 0·29 per cent. before she was deprived of food and 0·3 per cent. when she first came under observation. It was not until she had starved for another two days that it dropped to 0·09 per cent. The patient went home with a new diet scheme and has remained sugar-free for a month, while her blood sugar has not risen higher than 0·13 per cent. (Chart 2.)

CHART 3.



Experiences of this sort bring home to one the necessity for controlling examination of the urine for sugar by analysis of the blood, and emphasise the fact that the aim of our treatment of diabetes should be to prevent hyperglycæmia, not merely to eliminate sugar from the urine. So long as blood-sugar estimations were difficult to carry out there was a valid excuse for our relying entirely on urinary analysis, but the modern micro-chemical methods[2] require so little material and are so readily performed that we should no longer be "content with the shadow, but grasp at the substance."

The Nervous Factor.

There can be no doubt that there is a nervous factor in many cases of diabetes, although it is rarely possible to prove it. I am inclined to think that the relation between the calcium and magnesium output in the urine may afford some indication, for I have found that the latter is usually higher than the former in nervous people, and on several occasions I have seen a sudden rise in the magnesium excretion, with little or no change in the calcium, as the result of nervous disturbances or injury.

Cases in which a nervous element is probably present answer well to alimentary rest, but always do best when treated away from home and their ordinary surroundings, owing probably to the mental effect of the change in environment. I urge these patients to take as much fresh green vegetable as possible because of the inorganic salts they contain, and I find that minute doses of magnesium sulphate three or four times a day tend to steady their nervous system and consequently control the glycosuria. Purgative doses should be carefully guarded against, however.

One of the most striking examples of the influence of nervous excitement on sugar excretion I have met with was in a musician who came under my care last year. Originally he excreted about 50 gm. a day, but became sugar-free after three days and four nights of starvation, the blood sugar coming down to normal next day. On the diet that was eventually worked out for him he remained sugar-free for over a month. Three days after he returned to work he passed 10 gm. of sugar, although no change had been made in the diet, and the next day's specimen was sugar-free. The same thing happened the following week, and I then found that on each occasion he had taken part in a concert and had been particularly affected by the music. So, as an experiment, I asked him to attend another of the same series of concerts, with the result that he again passed sugar in his urine. He has since confined his activities to less exciting work, and has had no return of the glycosuria. (Chart 3.)

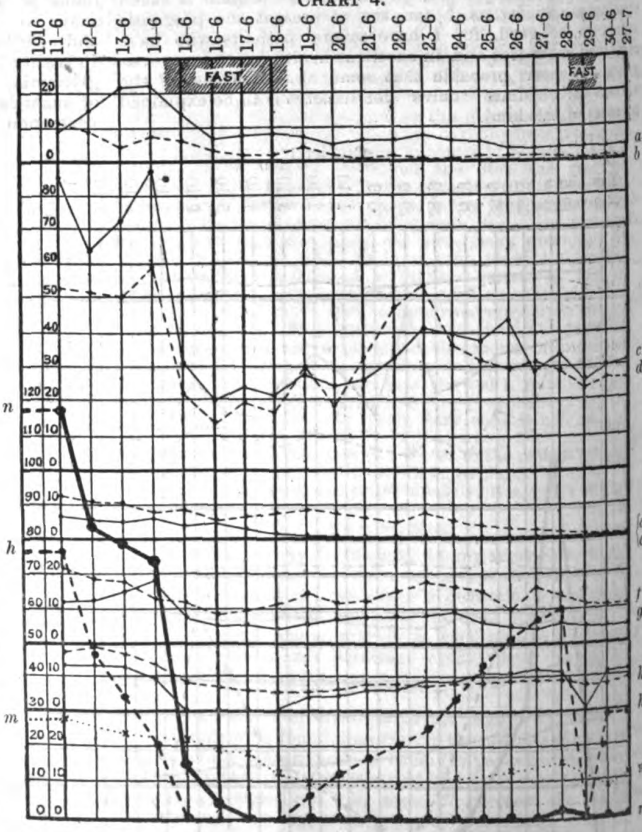
[2] THE LANCET, April 21st, 1917, p. 613.

Questions in Regard to Advising Fasting.

From what I have said it will be gathered that I do not look upon Allen's fasting treatment as the best for all forms of glycosuria, although I consider that it marks a great advance in the available methods and gives results which can be obtained by no other means in many instances. It should be used with judgment, however, and one should always bear in mind that the keynote of the treatment is under-nutrition. A practical question that sometimes arises, therefore, is whether a controlled, and may be a mild glycosuria, with an adequate diet and reasonable enjoyment of life, is not preferable to the theoretical ideal of a permanently sugar-free urine, which can only be obtained by a diet that will not satisfy the pangs of hunger and requires constant close supervision? The answer will depend on circumstances and the temperament of the patient. These should be considered carefully before advising the treatment, especially as, once it is begun, it must be continued; for as I pointed out in an article last year,[3] the return to an ordinary carbohydrate-free diet almost inevitably brings about a rapid increase in the acidosis, with excessive tissue waste and death from coma.

That such should be the case is not difficult to explain. Daily analysis of the urine during the fasting period shows that coincident with the fall in the sugar excretion there is a drop in the whole level of metabolism, the total nitrogen sinking until it stands at a steady level of 4 gm. or 5 gm. a day. At first there may be a rise in the output of uric acid and creatinine, but as the fasting proceeds they also sink, and the same is true of the amino-acids. A most striking change generally occurs in the acidosis. At first this, as shown by the total acidity, ammonia nitrogen, calcium, and

CHART 4.



[3] Practitioner, 1916.

magnesium, may rapidly increase, and there is a corresponding rise in the excretion of acetone bodies. Sometimes the oxybutyric acid output is also increased temporarily, but often it falls from the first day, and is replaced by a larger excretion of acetone and aceto-acetic acid. Ultimately these also begin to clear, although some acetone may be excreted for a considerable time. Finally the ammonia, calcium, and magnesium, with the total acidity, reach normal levels, and the urine may afterwards become alkaline as vegetables are taken. After feeding is commenced, and particularly when protein foods are introduced into the diet, the total nitrogen rises again, but if the dieting is properly carried out the patient remains in nitrogenous equilibrium, and there is no increase in the acidosis. (Chart 4.)

Supposing now that a patient in this condition is suddenly transferred to a "carbohydrate-free" diet, the immediate effect of the largely augmented protein intake is to stimulate metabolism some 50 per cent. or more over what it would have been had the same caloric value been given in the form of carbohydrate, with the result that there is rapid tissue waste, with a greatly increased excretion of amino-acids, uric acid, creatin, and creatinine, a rise in the formation of acid bodies, and consequently increasing depletion of the alkaline reserves of the body, which are no longer being replenished by the bases contained in the vegetables that previously constituted so large a part of the diet. More fat and less carbohydrate are also being taken, so that the products of the imperfect combustion of fat are increased and added to the total acid bodies, still further depleting the alkaline reserves in the organism. Choked by the accumulated "clinker" of a diet it is incapable of metabolising, and worn out by the attempt to utilise its own tissues as a source of energy, the body soon becomes unable to carry on its work and the patient dies of diabetic coma.

Acidosis.

Formerly the most common cause of death in diabetes, coma should now be one of the rarest, for in starvation, followed by a largely vegetable diet, we have a powerful weapon for preventing and controlling the acidosis from which it arises. Essentially, acidosis results from the imperfect oxidation of fat, and this in its turn is dependent upon the faulty combustion of carbohydrate by the body, for fat seems to be a less readily oxidised foodstuff than sugar and needs the fire of burning sugar to bring about its complete combustion. It has been calculated that one part of dextrose to three parts of higher fatty acids is required for the purpose. If less than this proportion is available the fat "smokes," as it were, the smoke being represented in the body by abnormal acid products. Since the maximum rate at which dextrose can be oxidised by the diabetic is always lower than in health, the diabetic is not capable of completely utilising as much fat as a normal individual, so that acidosis is more prone to develop.

In order to check a diabetic acidosis it is necessary to restore the proper relation of fatty acid to dextrose oxidation, which may be done by diminishing the fat in the body and increasing the power to utilise carbohydrate. Fasting will obviously ensure the former, and it is well known that it also tends to increase carbohydrate tolerance, so that abstinence from food is the most rapid method of restoring the required balance. The immediate result of starvation will depend, however, on the amount of fat stored in the tissues, and therefore on the nature of the previous diet. If a diet rich in fat has been taken and there is a considerable deposit of adipose tissue, the sugar available may be quite inadequate to ensure anything like complete combustion, and there will consequently be a rapid rise in the acidosis until the fat has been used up and a more normal relationship has been reached, but even then the acidosis may continue to increase, for proteins contain fatty acid radicals, yielding acid bodies when they are imperfectly oxidised, and some diabetics have lost the power of utilising more than a small proportion of the dextrose contained in the protein molecule, which normally serves for their combustion. By persisting with the starvation the ability of the organism to utilise carbohydrate usually becomes so far restored that enough is available to control the formation of abnormal acid end-products from both sources.

Some Practical Conclusions.

From a consideration of these facts it is obvious that all cases of diabetes cannot be expected to react to starvation in the same way, the determining factors being the amount of stored fat, the power to utilise the carbohydrate deposited in the form of glycogen, and the extent to which sugar of protein origin can be made use of. Hence three practical conclusions may be drawn:—

1. There is more danger of serious acidosis developing during starvation in fat than in thin diabetics.

2. When acidosis is present the patient should be prepared for the starvation treatment by being put on a fat-poor diet for several days before abstinence from food is commenced.

3. An initial increase in the acidosis is to be expected, but should not stop the treatment unless it assumes threatening proportions, as it will most likely subside if the fasting is persisted with.

Occasionally nausea, marked prostration, increasing drowsiness, and deep breathing, in conjunction with the characteristic changes in the composition of the blood, alveolar air, and urine, indicate a severe and progressive acidosis. The fast should then be terminated for the time being and the treatment directed to the acidosis. A restricted diet, consisting chiefly of green vegetables, with alkaline therapy, for a few days will generally suffice to control the condition, and a further fast will then usually result in improved carbohydrate tolerance and a sugar-free urine without increasing the acidosis.

During the fasting periods weak patients should be kept in bed, but the more vigorous should be encouraged to take as much exercise as is practicable, since the duration of the fast is shortened thereby. After feeding is commenced regular exercise should be continued, and even weak patients should have massage or regulated exercises. Short periods of vigorous exercise are to be preferred to long monotonous walks, and are particularly advantageous immediately following a meal containing carbohydrate, but care should be taken to avoid excessive fatigue. Exercise is of especial benefit for children, as it promotes the building of active tissue at the expense of fat and favourably influences growth. Mental occupation is most desirable, and patients should be encouraged to continue their ordinary work as far as possible.

The Protein Intake.

Long before the appearance of Allen's work I had come to the conclusion that quantitative regulation of the diet is necessary in all cases of glycosuria and that control of the protein intake is quite as important as adjustment of the carbohydrate, for the exhaustive chemical analyses of the excreta carried out in most of my cases showed that merely eliminating sugar from the urine does not suffice to control the disease if the patient is not in nitrogenous equilibrium, and that the only way to maintain this condition is to teach him to take his diet quantitatively. A number of papers published between 1912 and 1915 embodied these conclusions, and it is therefore gratifying to find that they are important features of Allen's plan, although I regret to see that in the attempt to simplify the treatment a rule-of-thumb method for establishing a nitrogenous balance is generally advocated instead of the more laborious, but certain, determination by direct chemical analysis.

Systematic examination of the urine shows that when the protein in the diet of a diabetic is gradually increased beyond a certain point, varying with each case, evidences of a disturbance of nitrogenous metabolism appear before sugar can be demonstrated in the urine, and that if these are at once recognised and the protein cut down glycosuria can be prevented. Merely to rely upon the appearance of sugar in the urine is therefore far from being an ideal method of regulating the treatment. My experience with several patients who have come under my care after treatment with alimentary rest by others has confirmed my distrust of this "hit-or-miss" process of determining the protein tolerance.

As an example I may quote the case of a young man who consulted me in the beginning of January. He had been treated in the previous November by a physician who has copied Joslin's method of applying the fasting treatment, and stated that after a 24 hours' fast his urine had been found to be free from sugar. His final diet, on which he had remained sugar-free according to Fehling's test, contained 60 gm. of carbohydrate and 16 gm. of protein, with as much fat as he cared to take. He complained that although he had strictly adhered to the quantities allowed he was steadily losing strength, was exceedingly miserable, and suffered from frequent attacks of cramp.

Temporarily continuing the same diet I found that a 24 hours' specimen of his urine gave no reaction for sugar with Fehling, and showed only a slight turbidity with Benedict's test, while quantitative analysis gave just over 1 gm. of sugar for the day. Determination of the sugar-content of the blood showed 0·19 per cent. two hours after the morning meal, so there was evidently some hyperglycæmia. Further

investigation of the urine revealed other important changes. The total nitrogen exceeded the intake by more than 2 gm., there was a very high uric acid output, the creatinine excretion was nearly double the normal, the amino-acid nitrogen amounted to 200 mg. a day, the true ammonia was just over 1 gm., and there were 140 mg. of oxybutyric acid and 893 mg. of acetone bodies, besides an excess of calcium and magnesium.

After a few days on a fat-poor vegetable diet, and one day of starvation, the blood sugar fell to 0·06 per cent., the total nitrogen of the urine dropped to 5 gm., the oxybutyric acid disappeared, and the uric acid, creatinine, ammonia nitrogen, calcium, and magnesium excretions fell to normal, while only traces of amino-acids could be found. His diet was then gradually worked up again, guided by the results of daily complete analyses of the urine and blood-sugar estimations, when it was found that, although his carbohydrate tolerance still stood at about 60 gm., he could only be kept in nitrogenous equilibrium, and his blood sugar maintained at normal figures, if the nitrogen intake did not exceed about 10 gm. a day. With a diet containing these amounts, and a specified quantity of fat, he became more cheerful, ceased to lose weight, and no longer suffers from cramp.

I need not discuss in detail the adjustment of the carbohydrate content of the diet to the patient's tolerance, as, provided he is kept in nitrogenous equilibrium, it is a comparatively simple matter, although I should again like to emphasise the importance of controlling the urinary analysis by examination of the blood. In passing I may also remind you that the carbohydrate and protein in the diet of a child should not be increased at the same rate as in an adult, but proportional to the weight, 1 gm. of carbohydrate for a child of 15 kg., for instance, being about equal to 4 gm. for an adult.

The Fat Intake.

The regulation of the fat intake in diabetes requires much more care than is frequently given to it. Hitherto fat has generally been regarded as a "make-weight" by which the caloric value of the diet can be adjusted to the theoretical requirement worked out from the patient's weight, but modern research suggests that this idea, like that formerly held with regard to proteins, must be abandoned, and that careful control of the fat-supply is no less important than a correct adjustment of the protein and carbohydrate intake.

It is still a debatable point whether sugar can be derived from fat, but apart from this the recent experimental work of Allen on dogs has shown that restriction of the carbohydrate and protein in the diet alone only serves to suppress the symptoms temporarily, and that unless the total metabolic load on the weakened assimilative functions is lightened by keeping the fat also within strict limits, downward progress, similar to that often seen in the human subject, occurs. The observations of Bloor on the blood have likewise demonstrated that defective fat metabolism is much more common in diabetes than has been supposed, for he found that abnormal lipoid values occur very frequently, apart from obvious lipæmia. Bloor showed that these lipoids originate from the fat of the food, an increase leading to an accumulation of fat and its metabolites in the blood until a point is reached when they can be no longer held in solution by the plasma, while fasting and a reduced fat intake have the opposite effect and bring about more efficient metabolism. There appears to be no definite relation between the lipoid content of the blood and the excretion of acetone bodies in the urine, however. Regular determinations of the lipoids in the blood would no doubt afford the best guide to a correct adjustment of the fat content of the diet and prevent overloading of the faulty mechanism, but the process is too long and complicated for routine clinical work at present, and one has to fall back upon such rough tests as the appearance of the blood and changes in weight.

I have already indicated the importance of not commencing the fast in severe cases with acidosis until the patient has been prepared by a few days on a fat-poor diet, but it is equally important that fat should not be added to the diet subsequently until a considerable tolerance for carbohydrate and protein has been established. Eggs are therefore often not the best form of protein to start with, as is usually advised. A creamy blood, an increase in the ketonuria, or the appearance of sugar after more fat has been introduced into the diet should be controlled by reducing the fat intake; otherwise it is best so to regulate the diet that a progressive loss of weight is prevented, while a gain, or rather an increase in adipose tissue, is avoided.

Periodical Curtailment of Diet.

Even when the total caloric value of the diet and the body mass have been reduced to correspond to the defective assimilative capacity of the patient, there is a risk that his metabolic powers may still be over-taxed if they are constantly worked at the same level. It is therefore advisable that the diet should be materially curtailed at regular intervals. The extent of the reduction and the frequency with which it is required will depend upon the severity of the case and the response to the preliminary treatment, so that no hard-and-fast rule can be laid down, but generally an all-round reduction by one-half for one day each week is required. In some cases this means that the patient must fast, in others that he is limited to low-value green vegetables, maybe with two or three eggs, while in others again a fair amount of carbohydrate food can be taken, provided that the fat and protein intake are kept low. When carbohydrate tolerance is very defective it may be advisable to prescribe one or two vegetable days in addition.

As the patient improves his allowance of carbohydrate is gradually increased, and the stringency of his fast, or semi-fast, days reduced, but he must advance a step at a time, with sufficient interval between each to test thoroughly his powers of dealing with the larger ration. The protein allowance in any case should aim at the standard of Chittenden rather than that of Voit, and no addition should be made, under any circumstances, until the patient has been in nitrogenous equilibrium for several weeks and all traces of acetone bodies have disappeared from the urine; even then it should be increased very cautiously, guided by the relation between the nitrogen content of the diet and the output in the urine. In this connexion I may point out that many so-called diabetic foods and breads, if not fraudulent as regards their carbohydrate content, consist chiefly of protein, which must be allowed for when they are used. As ordinary bread is rarely well tolerated by diabetics, some substitute of this description is often most useful, but it should never be given unless its carbohydrate, protein, and fat content are known and its composition is reliable.

Acid-Base Equilibrium.

I should have liked to consider in detail a subject to which I have recently devoted considerable attention, namely, the influence of the inorganic salts of the diet, and particularly the alkaline bases, on metabolism in diabetes, but a brief reference must suffice at present. Incidentally I have referred to one aspect of the matter when speaking of nervous disturbances, and it is needless to remind you of the importance of alkalies in treating acidosis, but there are other problems involved than these. Experiment has shown that the mechanism regulating the level of the blood sugar is peculiarly sensitive to disturbances in the acid-base equilibrium of the body, acid production leading to hyperglycæmia, while alkalosis exerts an opposite influence. Since meats and cereals are in general acid-producing foods, while vegetables and fruits usually yield an excess of bases, a diet rich in protein will tend to raise the sugar content of the blood, whereas a vegetable diet will lower it. May this not be one of the reasons why the largely vegetable diet usually given after the fast in the alimentary rest treatment is associated with an increase in carbohydrate tolerance, and a partial explanation of the deleterious effect of more protein than is needed for making good the actual wear and tear of the body?

Applying these ideas concerning the influence of the acid-base equilibrium of the body on carbohydrate metabolism to treatment, Murlin and Kramer, and more recently Underhill, have reported considerable improvement in cases of glycosuria subjected to careful alkaline therapy. Underhill employed large doses of sodium bicarbonate, while Murlin and Kramer used normal sodium carbonate, given intraduodenally in 1 per cent. solution. That alkalies increase sugar tolerance is an old idea which has been under a cloud for some years, but old clinical beliefs often contain a germ of truth, and it seems that further research on these lines may reveal methods of controlling glycosuria other than mere limitation of the diet.

At present our only reliable means of combating the disease is management of the diet, but in order to obtain the best results and actually halt the diabetic process it is necessary that it should be carried out with knowledge and as nice discrimination as the selection and prescription of a drug. Time and care devoted to the chemical aspect of each case render the task easier, and would prevent the empirical employment of one routine method, so saving many patients from unnecessary hardships and inconveniences. It is not

enough to consider only the glycosuria, or even the end-products of metabolism in the urine, the information to be obtained from analysis of the blood and fæces should also be taken into account, and I venture to think that the time is coming, and will come shortly, when a physician who attempts to treat a case of diabetes guided only by examination of the urine for sugar will be held as guilty of negligence as the present-day surgeon would be who failed to employ radiography when treating an injury of the bones or joints.

Nottingham-place, W.

THE LOCAL TREATMENT OF MENINGOCOCCUS CARRIERS WITH ANTISEPTICS.

(A REPORT TO THE MEDICAL RESEARCH COMMITTEE.)

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OWING to the measures adopted in the Navy to limit the spread of cerebro-spinal fever a large number of carriers were detected in the Portsmouth depôt and isolated in a special camp. It then became necessary to attempt to sterilise the throats of these men, and, although from analogy with other diseases the local application of antiseptics appeared likely to be unprofitable, it was thought desirable to give these a trial. If the antiseptic did not destroy the cocci in the throat, it was possible that it might prevent the cross-infection from one man to another. Further, the use of inhaling rooms in the Army had been said to give encouraging results.

In an experimental treatment of this sort there were three important matters to be considered: (1) The antiseptic to be used; (2) the method of application; and (3) the index of cure.

1. *The Antiseptics Used.*

The antiseptics most thoroughly tested were chloramine-T and acriflavine. Dakin's new dichloramine compounds came to hand too late in the season to make a satisfactory test. Other antiseptics were boracic acid, carbolic acid, magnesium hypochlorite, formalin, potassium permanganate, guaiacol, and several others. In addition to these, we administered to a few men a placebo in the form of tablets of formalin.

2. *The Method of Application.*

Chloramine-T was applied in two different ways:—

(*a*) In an inhaling chamber, the drug being dispersed as a fine cloud by a high-pressure steam-jet. This apparatus differed in design from that proposed by Colonel M. H. Gordon for the Army, but no doubt gave similar results. A 5 per cent. solution of chloramine-T was used in the reservoir of the nebuliser; this strength was found to give as powerful an atmosphere of chlorine as was pleasant. The room accommodated about 10 men and these remained therein for about 15 minutes per diem. They were instructed to breathe strongly through the nose during this time, but there was no way to ensure that these orders were carried out, and in many cases they probably were not.

(*b*) In a nasopharyngeal spray. This was a glass hand-spray made by one of us, the nozzle of which was readily slipped through the mouth into the nasopharynx. Two or three pumps were given with the bellows and the chloramine-T (2 per cent.) thus came copiously into contact with the whole nasopharynx and often dripped from the anterior nares. This treatment was applied once a day.

Acriflavine (kindly supplied to us by the Medical Research Committee), in a strength of 1 in 500 in salt solution, was applied daily with our nasopharyngeal spray.

The other antiseptics mentioned were used in the earlier stages of the investigation. They were all applied with Burroughs, Wellcome, and Co.'s "Glaseptic" nasal spray until the drug could be felt in the nasopharynx. The strength of boracic acid was one drachm to the pint, of carbolic 1 in 100, of formalin 1 in 200, and of potassium permanganate 1 in 1000.

3. *The Index of Cure.*

The apparent value of these antiseptic treatments depends very largely upon what end it is proposed to achieve and the exact manner in which the process is carried out. In general the technique is to apply the treatment until swabs taken from the nasopharynx fail to reveal the meningococcus. The man is then looked upon as cured. There are, however, a number of fallacies which must be avoided.

(*a*) The treatment must not be carried on continuously during the whole period of quarantine for two reasons. First, the treatment if applied on the day that the swab is taken will directly vitiate the result. We have therefore always allowed 24 hours to elapse after treatment before the swab is taken. Secondly, the treatment if applied continually will readily diminish the number of meningococci or reduce their vitality so that they will not grow in culture, but when treatment is stopped they will frequently reappear again. It is therefore essential not to apply treatment continually, but to give the man a chance of relapsing before he is said to be cured. In practice the routine has been as follows:—1. Upon receipt a positive carrier is treated once a day until his next swab is due—that is to say, until six days have elapsed since the first swab. In practice this is usually one or two days' treatment. 2. Treatment is stopped 24 hours before the swab is taken. 3. It is continued after the swab is taken until the report is received. 4. If this is negative treatment is stopped, and if the man remains negative on weekly test, no further treatment is given. 5. If the report is positive, treatment is continued until the next swab is due. More recently, in order to give the "positives" a greater degree of treatment, we have swabbed them while positive every 14 days instead of every week. On a negative swab being obtained, however, we reverted to the weekly tests.

(*b*) A certain period of time must be allowed to elapse after a negative swab is obtained before a man is said to be cured, in order that the permanency of the cure may be established. It is customary for a certain number of negative swabs at fixed intervals of time to be required before a man in the services is allowed out of quarantine. The precise number of swabs has never, to our knowledge, been accurately worked out. In the Army it was two, while the Navy at one time required six weekly negative swabs. During the past season this number was reduced to four. All our carriers, therefore, have been retained under observation until at least four negative swabs have been obtained, and we are thus able to give more accurate information as to the permanence of cure in these cases.

The following figures show the number of relapses which occurred after various numbers of "negatives" had been obtained. 375 carriers (pure "Gordon" types) were subjected to the "4-negative" standard. Of these—

137 relapsed (185 times) after 2 "negatives" = 36 per cent.
63 ,, (74 times) ,, 3 ,, = 16 ,,

A small number of men were examined by mistake or for various reasons for more than the necessary 4 "negatives." Of these—

13 carriers relapsed after 4 negative swabs.
5 ,, ,, ,, 5 ,,
4 ,, ,, ,, 6 ,,
2 ,, ,, ,, 7 ,,

The number of carriers who were examined after four "negatives" is so small that no statistical capital can be made out of these latter figures. Nevertheless, it is certainly remarkable that so many relapses were observed in so few cases. From the foregoing figures it is clear that if two negative swabs are taken as the index of cure no less than 36 per cent. of the men will, in fact, not be cured, and will be returned to the community in the same condition as they were before they were isolated. It is also clear that under these conditions of "cure" a form of treatment may readily be supposed to have a value which is quite fictitious.

The number of negative swabs which constitutes a cure is a practical question which has to be decided with due regard both to inconvenience to the Service and to safeguarding the Service. It appears to us that it would be irrational to undertake a very extensive system of control, as in the Navy, and then to stultify that system by prematurely discharging one-third of the proved carriers on two negative tests. Clearly the proved carrier is the man on whom attention should be most concentrated if extensive administrative measures are taken against this disease at all, and thus it would appear that the naval routine of four "negatives" is better than two "negatives." The number of men involved

when the carriers are only derived from contacts is so small relatively to the whole Service that four "negatives" should not entail undue inconvenience. In all our cases, therefore, the index of cure has been four consecutive negative swabs taken at weekly intervals. During the whole of this time no treatment has been applied in order that every opportunity for early relapse might be present.

The Results of Treatment.

Owing to the relatively small number of carriers and to the fact that at first the treatment was often changed, the estimation of the value of these different methods is difficult. On examining the figures, however, it is soon found that there is another factor which enormously increases the difficulty—namely, that one-third of the men become cured immediately upon entry into the isolation camp *whatever the treatment applied to them may be.* Thus of 375 carriers of pure "Gordon" types, 124 registered their four consecutive negative tests immediately upon entry into the isolation camp. The treatment applied to these men was practically nil, since by the time the "doubtful" colonies had been proved to be positive, and the man had been removed to the isolation camp, the greater part of the week had passed and only one, or at the most two, days' treatment remained before it had to be stopped preparatory to the next swab. When it is remembered that this treatment consisted of formalin tablets and boracic nasal sprays, as well as chloramine-T and acriflavine nasopharyngeal sprays, it appears justifiable to us to regard the effect of treatment as nil, and to assume that these men cleared up spontaneously. Since, then, one-third of the men are cured spontaneously, a drug must be very decisive in results before its curative action becomes very obvious.

The effect of the antiseptics has been estimated in two ways: (1) by calculating the ratio of cures to the number of men treated by each antiseptic; and (2) by counting the number of men who obtained 4, 3, 2, 1, or no "negatives" *immediately* upon starting upon a particular treatment.

TABLE I.—*Showing the Cures Effected by Various Treatments.*
TABLE II.—*Showing the "Immediate Negatives" obtained by Various Treatments.**

TABLE I. TABLE II.

Treatment.	Number treated.	Number cured.	Per cent. cured.	Number treated.	Immediate negatives. 4	3	2	1	0
Chloramine-T in inhaling room ...	85	43	50	91	38	2	15	4	32
Chloramine-T in spray	96	60	62	99	40	2	13	10	34
Acriflavine	101	59	58	101	51	11	9	26	4
Boracic	50	29	58	31	22	0	7	1	1
Carbolic	64	30	46	54	27	0	8	5	14
Magn. hypochlor. ...	59	28	47	52	25	0	5	8	14
Formalin	65	29	44	55	22	0	11	6	16
Pot. permang.	63	30	47	47	17	0	5	5	20
Guaiacol	35	17	50	26	8	0	4	0	14
Formamint	14	5	35	15	6	0	3	0	6
Average	632	330	52	—	—	—	—	—	—

* In Table II. the cure is credited to that treatment under which the man was last.

Table I. shows that about 50 per cent. of the men treated by any method were cured. Any variation in the percentage is not greater than might be produced by chance and has no significance.

Table II. shows that with each form of treatment 40–50 per cent. of the men are cured immediately; with boracic acid alone is the figure much higher, but here the factor of error due to small numbers comes in acutely. This percentage (40–50) corresponds roughly to that given by all treatments together (33) which, as has been explained, may be assumed to be no treatment. The difference between the 33 per cent. of no treatment and the 40–50 per cent. of treatment is due, not to the efficacy of treatment, but to the fact that the two figures are calculated from two different series of men. The 33 per cent. relates to carriers of meningococci which agglutinate with monovalent sera, while the 40–50 per cent. refers to a series which includes in addition a number of carriers of cocci which agglutinate feebly or not at all with monovalent sera. These latter often fail to agglutinate, and therefore these carriers are more easily "cured."

It is clear that the therapeutic effect of none of these antiseptics is sufficiently great to class one as better than another.

On examining the figures of those men who remained positive after treatment, it is again observed that the results are fairly similar; about one-third of the men failed to obtain a negative immediately after treatment. Acriflavine and boracic are exceptions to this rule; the former showed only 4 positive in 101 after treatment, and the latter 1 positive out of 31. In the case of acriflavine these positives have passed into the group of "1 immediate negative," and there is some evidence that acriflavine actually does produce a transient inhibition of the bacteria.

Conclusion.

Looking at the results as a whole, we conclude that one-third of the men recover spontaneously, and that none of the methods of treatment tested has any conspicuous merit, nor has one any obvious advantage over another. This result is what might be expected from analogy with work on diphtheria carriers.

We are much indebted to Dr. John Brownlee, statistician to the Medical Research Committee, for opinions upon figures submitted to him.

ON THE CLOSURE OF WAR WOUNDS IN HOME HOSPITALS.

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AS the result of experience gained during the last two and a half years it has been found possible to render wounds, the discharges from which have been teeming with pus organisms, surgically clean, so that in a period varying from a very few days to at most a week or two, an infected wound can be stitched up with every prospect of something approaching primary union taking place.

The two surgeons whose names are chiefly associated with these results are, in this country, Rutherford Morison and, in France, Carrel. Through the courtesy of Sir Berkeley Moynihan I was privileged in October, 1916, to see Mr. Rutherford Morison demonstrate his method of treating war wounds with "B.I.P.P.," and also to hear Dr. Sharman, of Pittsburg, who had spent some months in France seeing war surgery, relate his experiences at Carrel's hospital. More recently I heard Colonel C. J. Bond, of Leicester, describe the Carrel-Dakin treatment, and not less useful have been several discussions on the subject with Colonel Moynihan himself.

Between November, 1916, and the end of June, 1917, I have performed well over 300 operations for the closure of war wounds at the Bradford War Hospital and have gradually evolved a technique (which will probably be further modified as my experience grows, but) which already gives me results which I regard as very satisfactory and which I propose to describe in this article. This I shall do at some length, since I consider that the highest percentage of good results can only be obtained by following out the method in detail.

The Carrel, B.I.P.P., and Bradford Methods.

The Carrel method.—The Carrel treatment consists (1) in the sterilising of the wounds, and (2) in the suture of the surgically clean wound. When a case is seen soon after the wound has been inflicted an anæsthetic is given; the skin around the wound is thoroughly cleaned and the wound is freely opened up, foreign bodies, lacerated muscles, damaged skin edges, and loose bone fragments are removed, all bleeding is stopped, and special tubes are inserted, through which is instilled into the wound every two hours a solution containing 0·5 per cent. of active chlorine—the object being to keep an efficient antiseptic constantly in contact with the whole of the wound surface. The discharge is microscopically examined every day or two, and in from 5 to 11 days the wound is usually sterile enough (1 organism to each 4 microscope fields) to enable it to be completely stitched up and for primary union to result. Colonel Moynihan tells us that notices are hung up in Carrel's wards to the effect

that every wounded man whose wound suppurates has a right to demand an explanation from his surgeon!

Now the problem of wound closure in the British war hospital is not so simple as this. Cases come over from France in hundreds labelled "Carrel-Dakin treatment"—with one convoy over 40 such cases came to Bradford—but they are almost without exception suppurating, generally profusely; commonly the tubes have been removed, and if they are still in the instillation of Dakin's fluid has been intermitted. The process of wound cleansing has to be started all over again, and although, sometimes in a few days, more often only after a week or two have elapsed, the bacteriologist is able to report that the wound is surgically clean, my experience is that simple suture undertaken then is likely to be followed by something disappointingly short of primary union. Nor is this to be wondered at when we remember how real a fact latent sepsis is; how, many months after a wound has healed, forcible movements or even simple massage may light up infection—suppuration, or tetanus, or even gas gangrene—it is easy to understand that, during the suppuration period, organisms will have had time to "dig themselves in" to the deeper tissue cells, from which they are able to sally forth to upset the healing process in the stitched-up wound.

The B.I.P.P. method and its limitations.—Morison's B.I.P.P. method aims at introducing into a wound, admittedly infected, chemicals which for a long period continue to generate disinfectant agents, which experience has shown will effectually keep under the infection and allow healing to proceed. In many cases the results are excellent, but commonly some area of the wound has to heal by granulation. Occasionally pus collections form and require draining, and whenever there is much loss of tissue and consequent tension on the stitches these are likely to cut out and allow the skin edges to gape.

The Bradford method.—The method which experience has led me to adopt includes something of the B.I.P.P. method along with the Carrel-Dakin treatment, and may now be described in detail.

I. *Wound Sterilisation.*

Most of the wounds as they arrive from France have already been opened up. Where pus is pocketing in the track of a through-and-through wound, or beneath or between two adjacent muscles, or where loose bone fragments or other devitalised or foreign bodies are present, an anæsthetic must be given and the wound cleansed and laid freely open. *The skin incision whenever possible should extend the whole length of the wound.* A wound with a narrow bottle-neck opening may have a Carrel tube in it and Dakin's fluid instilled into its cavity, but it is nevertheless not being treated by Carrel's method.

The ideal Carrel wound is a basin which can easily be kept full to the brim with Dakin's fluid. Such a wound would be a deep flesh wound in the front of the thigh. Into the depths of such a wound are passed one or more tubes of about ¼ inch calibre, of which the distal end is closed by a ligature and which has a few tiny side holes punched in that part of the tube which lies in the wound. The tubes are connected with a reservoir containing Dakin's fluid hung over the bed, and every two hours the nurse releases a clip and allows just enough fluid to escape to fill the wound to the brim without allowing any to run over.

Posture can often be utilised to make it easier to apply the proper treatment—e.g., a man with a wound on the outer surface of his right thigh can be made to lie comfortably on his left side—so that his wound is uppermost. And it is remarkable how contentedly a man with a wound of the buttock will lie for days together on his face.

When the wound is so situated that it cannot be made to hold fluid basinwise, gauze 8 to 12 thicknesses is cut exactly the shape of the wound but about ⅛ inch less in diameter, so as to leave a tiny red margin all round when the gauze is packed into the wound. The Carrel tube is placed deep to the gauze, which is saturated with fluid every two hours.

In some of the hospitals in France an elaborately constructed wool and tissue covering is pinned around the affected limb. Personally I favour extreme simplicity of dressings; a cage over the wounded part, and no dressing but simply a dressing towel placed so that it keeps dust and flies from the wound but not touching the wound itself, since if it is allowed to do so it will absorb fluid from the wound surface and so tend to defeat the object sought. A really careful nurse who understands the principles of the treatment can generally manage to regulate the supply of Dakin's solution, so that there is no overflow to irritate the skin; if fluid does run over and threaten to produce dermatitis, the simplest preventive is boric ointment melted in a glue-pot and painted with a brush on to the threatened skin.

The bacteriological examination.—Every third or fourth day a platinum loop-full of the discharge is taken from the wound surface wherever it looks least healthy and spread thinly and *uniformly* evenly on to a microscope slide. It is fixed by heat and stained (our bacteriologist, Dr. R. Honeyburne, finds brilliant-green a very satisfactory stain, differentiating well between nucleoli and organisms) and examined with a 1/12 inch oil immersion lens. The organisms on ten fields are counted, and I make it a rule not to attempt to close a wound until two reports of an average of less than three organisms per field have been returned.

II. *Wound Closure.*

Flesh wounds.—1. The skin around the surgically clean wound is cleansed in the ward by the nurses, much as the skin prior to a clean operation is, but only so far as it can be done without causing pain. In the theatre under general anæsthesia the skin is vigorously rubbed over with biniodide of mercury in spirit (1 : 500). 2. The edges of the wound are trimmed with a scalpel evenly all round—rather less than ¼ inch of healing edge being removed, but in wounds which are tending to scar over all the scar tissue is cut away. 3. The granulations are thoroughly curetted. 4. The skin edges are undercut; even in a small wound where the edges will easily come together they are undercut, as I find that much more accurate apposition is thus obtained. In large wounds, particularly with much loss of tissue, extensive undercutting is done. 5. Any definitely bleeding vessels are tied (oozing does not matter), the whole wound area is swabbed with methylated spirit and a little B.I.P.P.—never more than an eggspoonful and in a smallish wound half that quantity—is scrubbed into the raw surface with the gloved fingers. 6. Wherever possible any raw muscle surface is closed by bringing together the edges of the deep fascia (exposed by the under-cutting) with a running stitch of stout catgut. 7. Thick silk sutures (No. 5 pedicle silk boiled and soaked for 48 hours in tinct. iodi) are passed through the skin and the deep layers of the wound at intervals of about ½ inch and tied tightly so that no "dead cavity" is left. Where there is tension on the part I find the most useful stitch a combination of a mattress with a simple surgical stitch. The mattress stitch is passed widely and deeply and pulled tight at one corner with a single loop; the needle is then passed through the skin edges, and on tying the final surgical knot wide apposition of the deep structures and accurate approximation of skin edges are obtained. 8. A continuous catgut stitch is used to complete the coaptation of the skin edges. 9. The skin is cleaned and smeared over with Moynihan's cream[1] and a simple dry gauze and wool dressing applied.

The dressing is not touched for 14 days. It is then removed; any discharge is wiped away and Moynihan's cream and another dry dressing are applied. At the second dressing a week later the stitches are removed, and never before.

Of 10 cases so treated I find that 7 or 8 will have healed practically by first intention, 1 or 2 will have gaped a bit at one part, leaving a superficial granulating area, and the tenth—practically always one where there has been loss of tissue and consequent tension on the stitches—will be a failure, at any rate in large part, and will require to be done again, or perhaps skin-grafting will be necessary.

It is not simply that healing is by this means accelerated and frequency of dressings enormously reduced; lineal non-adherent scars take the place of wide adherent disabling scars. I am sure that for years to come it will be our duty to reduce disability in war pensioners by excising the painful scars which limit movements and reduce earning capacity, and I have already performed a considerable number of such operations with the happiest results.

Compound fractures of long bones.—In cases of recent wounds with compound fractures I do not attempt Carrel's treatment but adopt Rutherford Morison's

[1] A mixture consisting of as much bismuth carbonate in ½ : 1000 watery solution of HgI_2 as will make a thick paste.

treatment, because by so doing the limb can at once be fixed in a dressing which does not require to be changed for a fortnight, and so a great amount of suffering is done away with. The following is a summary of Mr. Morison's own description[2]: 1. Under an anæsthetic clean the skin. 2. Open the wound freely, and, if possible, sufficiently to permit of inspection of its cavity. Cleanse the cavity with dry sterile mops, Volkmann's spoon, &c., and remove all foreign bodies. 3. Mop the surrounding skin and the wound cavity with methylated spirit. 4. Rub B.I.P.P. into all parts of the wound with dry gauze, removing any excess.[3] 5. The wound is then stitched with deeply placed iodised silk sutures, and a large dressing of iodoform gauze and sterile wool bandaged on. The dressing is not removed for a fortnight. If there is much discharge the outer dressing may be removed and a clean pad applied.

Frequently when the dressing is taken off the discharges, sometimes evil-smelling, are found plastered all over the skin, producing a most unpleasant appearance. But when the discharge has been bathed away the wound is usually found to be to a large extent healed, a narrow strip of superficial granulations remaining to be dressed once in every five or six days.

It approaches the miraculous to see a limb pouring foul pus from a wound at the bottom of which lies a segment of humerus or of femur smashed into a multitude of spiculed fragments, and every attempt at dressing which causes the patient untold agony, bandaged (if it is an arm) to the chest wall or (if it is a femur) fixed in a Thomas's splint, and after having been left untouched for a fortnight uncovered and found to show only a superficial granulating wound from which commonly the 14 days' discharge has been less in amount than that of one day previously. Not only is there saving of nursing labour and of pain to the patient and the conversion of a compound into a simple fracture, but the healing of soft parts takes place without that terrible formation of contracting scar-tissue which, by compressing the nerves, produces so frequently a helplessly paralysed limb.

Compound fractures of short bones.—In cases of smashed tarsus or carpus the missile has often "mushed" up one or more bones. An X ray plate may show no obvious bone injury, but unhealthy granulations will soon pout from a relatively small skin wound, the hand or foot becomes painful and tender, there is some fever and more or less swelling of surrounding soft tissues. Under an anæsthetic the wound (or, if there are two, the uppermost one) is opened up, the pulped-up bony tissue is scraped away thoroughly, and the wound made as basin-shaped as possible, the skin wound being enlarged until it is larger than any transverse diameter of the hole in the bones. One or more Carrel's tubes are inserted, and the wound cavity is kept constantly filled with Dakin's solution. The hole quickly becomes lined with healthy granulations; in a comparatively short time the wound has closed in and healed over. The majority of the patients get moveable joints. I have seen almost normal function after removal of the astragalus and part of the os calcis.

Chronic necrosis with sinuses.—There remains to be considered the case in which a fracture of a long bone has united, but a sequestrum is locked up in the callus or some less definite area of necrosed bone keeps up the discharge of pus from one or more sinuses. The first case I treated by the Carrel method may be described as a typical example.

A man was admitted to the Bradford War Hospital at the end of 1916 suffering from a badly smashed femur. The wound was bipped and the fracture united, and the man was sent to an auxiliary hospital, walking on crutches. A sinus appeared and continued to discharge pus even after a fairly large sequestrum had been removed. At Sir B.G.A. Moynihan's suggestion an extensive operation was performed. A 10-inch incision was made in the line of the femur, through the old scar on the front of the thigh. The incision was carried down to and through the periosteum and the soft tissues were stripped back from the bone. All the bony irregularities about the seat of fracture were freely chiselled away until the exposed section of femur formed a smooth, regular floor of a large basin-like cavity capable of holding several ounces of fluid. A sequestrum 3 in. long was found encapsuled in the new bone and removed. The skin was stitched back on either side, so that the wound remained funnel-shaped. It was treated on Carrel lines, being filled up with Dakin's fluid every two hours. In this case no tubes were used: the limb was adjusted with pillows until the wound margins were level and the fluid was poured in every two hours to keep the "basin" full.

In less than three weeks the bacteriologist was able twice to report the wound surgically clean. Under ether the soft tissues were freed from the bone, a little B.I.P.P. scrubbed into the raw surface and thick silk sutures used to bring together the whole thickness of skin and muscles over the bone. The first dressing was done 14 days later and almost primary union found to have taken place. A fortnight later a linear scar remained and the soft tissues were moveable over a smooth bone surface.

Such results as these make one feel that a new era has arrived with regard to the treatment of infected wounds and that surgeons will never again allow wounds to go on suppurating, satisfied with doing nothing to induce them to heal beyond draining and dressing them.

In conclusion I have to thank Lieutenant-Colonel W. Wrangham for permission to describe the work done at the Bradford War Hospital.

[2] British Journal of Surgery, April, 1917. THE LANCET, 1916, ii., 268.

[3] B.I.P.P. is made as follows: Iodoform, 16 oz.; bismuth subnitrate, 8 oz.; liquid paraffin, 8 oz., or a sufficient quantity to make a firm paste. The powders are mixed together in a mortar and the paraffin incorporated.

STUDIES IN WOUND INFECTIONS.

ON THE GROWTH OF ANAEROBIC BACILLI IN FLUID MEDIA UNDER APPARENTLY AEROBIC CONDITIONS.

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IT has been known for some years that the addition of a piece of animal or vegetable tissue to any fluid media had a beneficial action on the growth of the anaerobic bacteria.

Tarozzi was the first to point out the advantage of such a procedure, the *sine qua non* of his method being the addition to the fluid media of a piece of animal tissue, usually kidney or testicle, taken as soon after the death of the animal as possible. This method, in spite of the trouble involved in obtaining such tissues perfectly sterile, was used extensively by Noguchi in isolating various forms of spirochætes.

Later, Ori and Wrzosek showed that the substitution of a piece of potato or other vegetable tissue for the animal tissues used by Tarozzi was followed by equally satisfactory results, and further, that sterilisation by heat did not interfere with the beneficial effect of such a procedure.

Wright and Dreyer, working in Boulogne, employed as a routine method for growing anaerobes tubes of broth to which a piece of potato had been added previous to sterilisation, and by such methods obtained abundant cultures of all the prevalent anaerobes isolated from wounds without taking any further precautions for obtaining anaerobic conditions; it was even found that growth occurred when a stream of oxygen was passed through the fluid portion of the media.

The usual explanation of such results has been that the animal or vegetable tissues contained some body capable of acting as a reducing agent. That living tissues, both animal and vegetable, act as reducing agents is a well-recognised fact, but it is unlikely that a small pellet of potato after being autoclaved should be able to bind all the oxygen which would be constantly absorbed from the surface of the media.

It was therefore decided to confirm some of the experiments that had been carried out by different workers and to try to ascertain if any other explanation could be found for these somewhat surprising results.

Experiments with Vegetable Tissues.

In order to confirm the results obtained by Wright and Dreyer showing that all the usual anaerobes found in wounds give an abundant culture when a small piece of potato or other vegetable is added to the broth before sterilisation, a number of broth tubes were taken, to each of which a small cube cut from a potato was added, after which they were sterilised in the autoclave. Into these a variety of anaerobic bacilli were planted, and the tubes were then incubated at 37° C. without any further precautions to produce anaerobic conditions. The tubes were examined for growth after intervals of 24 and 36 hours. The results are given in Table I.

TABLE I.

No.	Laboratory name of culture.	Type of bacillus.	Result.
1	Grout I.	*B. perfringens.*	Copious growth after 24 hours.
2	Hancock I.	,, ,,	,, ,,
3	Boone II.	B. of malignant œdema.	,, ,,
4	McArdle E.	,, ,,	,, ,,
5	Tholby III.	,, ,,	,, ,,
6	McFadzean II.	,, ,,	,, ,,
7	McFadzean VII.	,, ,,	,, ,,
8	Boone I.	A non-motile bacillus resembling *B. perfringens* except in its fermentation reaction.	,, ,,
9	Tholby IV.	Gram-negative bacillus with round terminal spore.	,, ,,
10	Tholby.	Bacillus resembling *B. tetani.*	,, ,,
11	Boone III.	Hibler IX. type.	Copious growth after 36 hours.

This table shows that the addition of a small piece of potato to the broth before sterilisation enables cultures of the anaerobic bacilli commonly found in wounds to proliferate rapidly in the absence of any further procedures to produce anaerobic conditions.

Further experiments showed that pieces of carrot, cabbage, grape were equally efficacious as potato. In addition to these substances flakes of bran were also employed, and an experiment was made in which different amounts of bran were added to the broth to ascertain if the growth varied with the amount of bran added. This experiment was carried out in the following manner: To a series of broth tubes, each containing 10 c.c. of broth, varying quantities of bran were added. After sterilisation in the autoclave each tube was planted with a loopful of broth culture of the bacillus of malignant œdema and then incubated at 37° C. without further precautions as regards anaerobic conditions. Examinations for the presence of growth were made at varying intervals. The results are shown in Table II.

TABLE II.

Amount of bran added.	Result after 18 hours.	Result after 36 hours.
1 flake.	No growth.	No growth.
4 flakes.	Slight growth.	Abundant growth.
10 flakes.	Good growth.	,, ,,
Many flakes.	Abundant growth.	,, ,,

This experiment shows that, up to a point, the more bran that was added the more copious and rapid was the growth. It may here be noted that of all the various substances which were employed in the experiments detailed in this paper to promote the growth of anaerobic bacilli in broth cultures, bran appeared to be the most efficacious.

Taking the result of these experiments into consideration, it was thought that some "foodstuff," such as vitamines, might have been given up to the broth by the vegetable substances added to it, which enabled the anaerobic bacilli to proliferate even when oxygen was present; in order to verify this, experiments were made to ascertain if anaerobic bacilli would grow in broth to which an alcoholic extract of bran had been added.

These experiments were carried out in several different ways. For instance, the alcoholic extract of bran was evaporated to dryness, and small portions of the substance thus obtained were added to the broth, or strips of sterile filter paper having been soaked in the alcoholic extract and then dried were placed in broth. Again, small quantities of the fluid alcoholic extract were added directly to the broth. These various samples of broth were then planted with anaerobic bacilli and incubated under ordinary aerobic conditions.

The results obtained by these experiments were conflicting. In some cases the broths containing the alcoholic extract gave abundant growths of the anaerobic bacilli, whereas control broth tubes gave no growth. In other cases, for instance, that experiment in which filter paper impregnated with the alcoholic extract had been added to the broth, growth appeared equally abundant in a control tube to which a piece of untreated filter paper had been added, as in those which contained the treated filter paper. It was also observed that growth occurred only in those tubes where a considerable mass of the solid alcoholic extract had been added or an extensive precipitate had been formed.

Experiments with Inert Substances.

Abandoning the idea that the growth of the anaerobic bacilli was due to the presence of any special "foodstuff," it was decided to carry out experiments to ascertain if growth would occur when various inert substances were substituted for the vegetable tissues.

In these experiments various porous substances, such as asbestos wool, cotton wool, lint, sponge, charcoal, chalk, cork, sand, cardboard, blotting-paper, khaki cloth, and, lastly, a rusty nail, were each added to a series of broth tubes, which were then autoclaved. Each series of tubes, together with a control tube of simple broth, were then planted with an equal quantity of an anaerobic bacillus and incubated under ordinary aerobic conditions. Examinations for the presence of growth were made after incubation had continued for 15, 18, 24, 36, and 48 hours. The results are given in Table III.

TABLE III.

Figures indicate the number of hours the tubes were incubated before growth appeared.

0 indicates no growth throughout the duration of the experiment.

– indicates that this special portion of the experiment was not carried out.

Bacillus planted.	Control tube of broth.	Substances added to broth.											
		Asbestos wool.	Cotton wool.	Lint.	Sponge.	Piece of charcoal.	Piece of chalk.	Piece of cork.	Sand.	Piece of card.	Piece of blotting paper.	Piece of khaki cloth.	Rusty nail.
B. perfringens	0	15	15	36	15	24	18	24	24	48	0	24	—
B. malignant œdema.	0	36	36	0	0	24	24	0	0	0	0	0	36
B. butyricus.	0	15	15	24	0	18	15	18	18	24	0	0	18
Pseudo-tetanus.	0	36	36	36	0	36	24	0	48	0	0	0	—
Tholby IV.	0	36	36	36	36	36	24	36	36	24	0	24	—

These results show conclusively that any porous inert substance when added to broth renders this medium quite as suitable for the growth of anaerobic bacilli, without any further precautions as regards anaerobic conditions being taken, as the addition of pieces of potato or other vegetable matter. These facts can be most simply explained by assuming that the bacilli lodged in the meshes of the various substances are locally able to produce anaerobic conditions, in consequence of which they proliferate at first only in the interstices of the material, but later also in the surrounding media.

On studying this table more closely it is, however, to be noticed that none of the tubes containing pieces of blotting paper developed any growth; in these tubes the paper added consisted of a small unfolded slip of thin blotting paper. Again, it is noticeable that growth developed only in two out of the five tubes containing pieces of khaki cloth. Owing to the small amount of this material available only a very small piece could be added to each broth tube, and during the process of sterilisation the woollen strands became so unravelled that none of these tubes contained a close-meshed mass comparable to that seen in the tubes containing the asbestos wool.

From these observations it appeared probable that neither in the case of the pieces of unfolded blotting paper or of the minute pieces of unravelled khaki cloth were suitable interstices formed to enable the anaerobic bacilli to produce the conditions necessary for their growth. It was therefore decided to carry out a further series of experiments in which different amounts of asbestos wool were added to the broth

in order to ascertain if a closely packed mass of this material afforded more suitable conditions for the growth of the anaerobic bacilli than a smaller and more open-meshed piece of the same material. This experiment was carried out as follows:—

Two strains of anaerobic bacilli were taken, one of which had been demonstrated to be a very strict anaerobe, the other being capable of proliferating under less strict conditions of anaerobiosis. Each of these bacilli were then planted into two culture tubes, the one containing ordinary broth, the other broth to which a quantity of sterile asbestos wool had been added. The quantity of asbestos wool added to these tubes was varied. In the tube in which the strict anaerobe was planted a larger and more closely packed mass of this wool was placed than in the tube in which the bacillus capable of growing under less strict anaerobiosis was planted. These tubes were incubated without further anaerobic precautions and examined after 24 hours, when it was found that the strict anaerobe showed abundant growth with much gas formation, while the less strict anaerobe, having only the protection of a small and open-meshed piece of asbestos wool, gave only slight growth and very little gas formation.

This experiment shows that the amount and consistency of the inert substance added to the broth is an important factor in making the conditions suitable for the growth of anaerobic bacilli.

Experiments with Capillary Glass Tubes.

In order to test further the soundness of the theory put forward above—namely, that growth takes place at first in the interstices of the mass of inert material, an experiment was made in which a hair-fine capillary glass tube was placed in the broth. Such a hair-fine glass tube would represent in its simplest form a single interstice in a mass of asbestos wool, and if the theory put forward above was correct the growth should commence in this tube and only later spread to the surrounding media. A further advantage of such an experiment was that even in the finest capillary tube growth could be recognised by the formation of minute bubbles of gas. These experiments were carried out as follows:—

A series of broth tubes were taken and planted with anaerobic bacilli, each variety of bacillus being planted in equal quantity into two tubes. Into one of the tubes, in the case of each bacillus, a hair-fine glass capillary open at both ends was placed, the other tube being kept as a control. The tubes were then incubated and after varying intervals examined for growth. In the case of the control tubes no growth was ever noticed but in a certain proportion of those containing the hair-fine capillary tubes growth appeared after an interval varying from 24 to 48 hours. That this growth commenced inside the capillary tube was shown by the appearance of minute bubbles of gas inside the tube before any evidence of growth could be detected in the surrounding media.

That it was only a proportion of those cultures containing capillary tubes which gave growth can be explained by assuming that, as these tubes would only contain a fraction of a cubic millimetre, and that, as the anaerobic bacilli were not planted out very thickly, a proportion of the capillary tubes would not contain even a single living bacillus.

In Table IV. a series of successful experiments are given, which show that all the anaerobic bacilli commonly found in infected wounds are capable of growing in broth to which such a hair-fine capillary tube has been added without any further precautions being taken to produce anaerobic conditions.

TABLE IV.

Laboratory name of bacillus.	Type of bacillus.	Broth control.	Broth + capillary tube.
Grout I.	*B. perfringens.*	0	Good growth in 36 hours.
Forrest I.	Malignant œdema.	0	,, 48 ,,
Forrest II.	*B. butyricus.*	0	,, 24 ,,
Tholby II.	Pseudo-tetanus.	0	,, 48 ,,
Tholby IV.	Gram-positive, acid-forming bacillus.	0	,, 36 ,,
Cullingford.	Putrefactive bacillus.	0	,, 24 ,,

Other Experiments: Summary of Results.

These results show that the growth of the anaerobic bacilli takes place at first inside the confined spaces; however, in order to show that anaerobic conditions were produced in the spaces, the following experiments were made.

Tubes of glucose broth were tinted with an aqueous solution of methylene blue, and a suitable mass of asbestos wool was then added. After sterilisation these tubes were planted with *B. perfringens* and incubated under the usual aerobic conditions. Rapid growth occurred, which was quite apparent after four hours, and it was noticed that the broth was completely decolourised in the immediate neighbourhood of the asbestos wool. On shaking the tube, however, the colour returned to its original density. This reduction and reproduction of the colour could be produced at intervals for several hours.

This experiment was repeated with broth coloured with sulphindigotate of soda with exactly similar results, and it was also found that some of the bacilli which were not very strict anaerobes were able to grow in this broth without any asbestos wool being added to it (especially when they were thickly planted), and that here also the decolourisation of the sulphindigotate took place at the bottom of the tube, where a large amount of bacilli were collected. It therefore seems certain that the anaerobic bacilli are either able to absorb oxygen rapidly or during their growth produce some very strong reducing substance which rapidly removes any oxygen that may be present.

Further experiments in which a similar technique was employed showed that during their growth the anaerobic bacilli were able to remove any oxygen from the culture media much more rapidly than many of the aerobic bacilli.

The above experiments show that the anaerobic bacilli are capable of proliferating freely in broth to which a piece of any inert porous substance has been added. The most convenient substance is a small pledget of asbestos wool, owing to the ease with which it can be sterilised by holding it in the flame of a Bunsen burner until it is red-hot.

These experiments also show that the growth takes place first in the interstices of the porous material; that in all probability anaerobic conditions are produced in these minute spaces; and that later the oxygen present in the surrounding broth is removed during the growth of the bacilli entangled in the porous mass.

Experiments with Substances under Anaerobic Conditions.

Lastly experiments were made to ascertain if a more rapid and more certain growth of the anaerobic bacilli could be obtained if in addition to the ordinary methods for obtaining anaerobic conditions a piece of inert porous substance was added to the broth into which the bacilli were planted. The details of these experiments are as follows:—

Experiment 1.—Six small test-tubes were taken and into each an equal quantity of sterile serum was placed, and each tube was then planted with an equal quantity of *B. perfringens* emulsion. Into three of these tubes a small compact pledget of asbestos wool was introduced, the other three tubes being kept as controls. After this all the six tubes were sealed with a layer of melted vaseline and incubated at 37° C. After three days' incubation it was found that no growth could be demonstrated in any of the three control tubes, whereas all the tubes containing the asbestos wool showed abundant growth. The absence of growth in the control tubes was probably due to the now widely recognised fact that *B. perfringens* will only proliferate in serum when the implantation is a heavy one.

Experiment 2.—A broth culture of the bacillus of malignant œdema was diluted by ten-fold steps to 1 in 1,000,000 dilution. Twenty c.mm. of each of these dilutions were then planted into tubes of: (i.) simple broth; (ii.) broth to which a small piece of potato had been added; (iii.) broth into which a pledget of asbestos wool had been placed. These tubes were then placed in the anaerobic apparatus described by McIntosh and Fildes and incubated at 37° C. The results obtained at the end of 24 and 48 hours are given in Table V.

TABLE V.

Media employed.	Result after 24 hours.	Result after 48 hours.
(i.) Broth.	No growth in any tube.	Growth in tubes planted with all dilutions up to 1 in 100,000.
(ii.) Broth + potato.	Growth in tube planted with culture diluted 1 in 10.	,, ,,
(iii.) Broth + asbestos wool.	Growth in tubes planted with culture diluted 1 in 10 and 1 in 100.	Growth in tubes planted with all dilutions up to 1 in 1,000,000.

These experiments demonstrate that anaerobic bacilli will grow both more rapidly and also from a smaller implantation when, *in addition to the usual anaerobic conditions*, some porous substance such as potato or asbestos wool is added to the culture medium.

AN UNUSUAL COMPLICATION OF LAPAROTOMY FOR GUNSHOT WOUND.

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IN the following case of gunshot wound of the abdomen, with perforations of intestine, which were sutured, diffuse purulent peritonitis occurred as a complication, consequent upon rupture of an abscess in the anterior abdominal wall. Treatment by the Carrel-Dakin method was carried out, and resulted in recovery.

The patient, a soldier of a rifle regiment, aged 26, was hit in the abdomen by a rifle-bullet on April 4th, 1917. He was admitted by a field ambulance on the same day, where, after the administration of morphia, he was marked for urgent attention, and transferred immediately to a casualty clearing station. There also on the same day his abdomen was opened by a paramedian incision. Five holes in the small gut and two tears in the mesentery were sutured. No other injury was found, nor any foreign body. He had a mild peritonitis for 24 hours, but progressed satisfactorily.

Thirteen days later, on April 17th, the patient was transferred to a base hospital. On admission his condition was good, temperature being 97·6° F. and pulse 72. There was localised tenderness over the middle of the scar; otherwise the condition of the abdomen was excellent. He complained of a little pain referred to the area of the operation incision. There was no rigidity and the abdomen moved freely on respiration.

Suddenly, on the night of April 17th, about 10 P.M., he was seized with acute abdominal pain. He vomited frequently. His pulse rose to 120; his temperature at 6 A.M. on April 18th was 100°. On examination there was general tense rigidity, considerable tympanites, great tenderness, but no appreciable dullness in the flanks. At 8 A.M. he exhibited all the signs of a diffuse peritonitis; the vomiting continued, and his condition became critical.

Operation, 9 A.M., April 18th. The original incision was opened. An abscess cavity full of thick greenish yellow pus was found on the posterior sheath of the rectus, and extending between the divided muscle. This had tracked backwards and burst into the peritoneal cavity through the original line of incision. The abdomen contained some pints of a thin greenish, purulent, non-odorous fluid. There were lakes of lymph widely diffused upon the intensely congested bowel. From this fluid pure cultures of *Staphylococcus pyogenes*, a short-chained streptococcus, and *B. coli* were isolated.

The patient's condition was so grave that it precluded any extensive manipulation of the bowel. No perforations were found, nor was there any sign of the escape of intestinal or other visceral contents. After copious irrigation with Dakin's fluid four drains of ¼-inch tubing 2 inches long were inserted, one in each flank, into the right and left paracolic gutters, and one into each groin. (Figs. 1 and 2.) These were stitched in position, and through each a Carrel tube was introduced into the abdominal cavity, so that about 6 to 8 inches of the perforated tube lay inside the abdomen. The flank tubes were planted into the paracolic gutters. The groin tubes were allowed to lie free amongst the coils of bowel. In turn each Carrel tube was sutured to the wall of the outer large drainage-tube. The excess of Dakin's fluid was not mopped out from the pelvis. The original anterior incision was then closed by through-and-through silkworm-gut sutures, taking all structures at once. A small tube was introduced into the abscess cavity in the rectus sheath At the time of the operation the incision wound was not "Carrelled." The anæsthetic administered was warm open ether, and subcutaneous transfusion with saline (about 1½ pints) was carried out during the operation. On completion of the operation, which lasted about 25 minutes, the pulse was 150, and the temperature subnormal. The patient's condition was then very grave.

In the ward the patient was put in the Fowler position. Subsequently, irrigation, with ampoule and tubing connected up to each of the four small Carrel tubes, was carried out three-hourly for the first two days and four-hourly for the next four days. Thereafter the irrigation was gradually slackened off from six-hourly to eight-hourly flushings. The total quantity of Dakin's fluid used at each flushing was from about 50 to 80 c.c.

Pulse and Temperature during First Six Days.

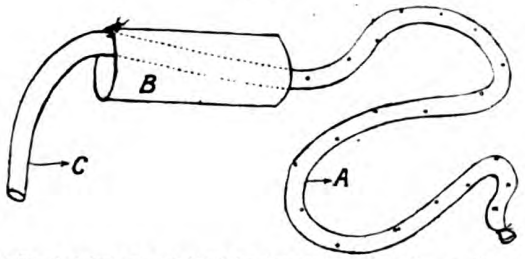
—	Operation April 18th.		19th.		20th.		21st.		22nd.		23rd.	
	A.M	P.M	A.M	P.M	A.M	P.M	A.M	P.M	A.M	P.M	A.M	P.M
Pulse	150	120	96	112	72	88	72	88	72	72	64	80
Temp. (° F.) ...	98·5	97	97·3	98	97·5	98·5	97	99*	98·4	98·7	97·7	99·2

* First rise above normal after operation.

On the evening of the day of the operation the patient's temperature was subnormal and remained so until the evening of April 21st (three days). The change in pulse was remarkable (see table). It registered 96 on the morning after the operation and 112 in the evening. The temperature chart was equally striking. His first rise above normal after the operation occurred on the evening of April 21st, when his temperature reached 99°. The pulse rapidly fell to normal, regained its tone, and from the day after the operation ran steadily at about 72 to 88. From April 23rd he ran a slight evening rise of temperature (usually 99·2°) which continued for 24 days. During this time, in the mornings, the temperature was always normal. On May 16th his temperature remained steadily at normal and his pulse was then regularly about 76. Only on one occasion did the temperature rise above 100°—namely, on the evening of April 30th—when the pulse also rose to 104. The cause was obviously a localised collection of pus, which was not draining adequately through the laparotomy wound.

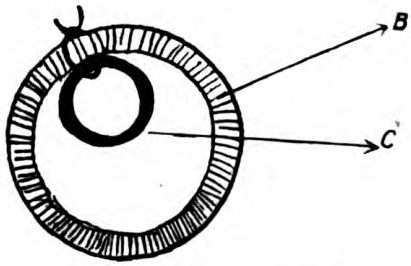
Dressings.—Patient was dressed twice daily for two weeks, and thereafter once daily. Owing to local infection from the abscess all the stitches had gradually to be removed from the laparotomy wound by the end of the third day. Pocketing occurred on both sides in the rectus sheath. Pockets were opened by sinus forceps and Carrel tubes were introduced into their furthest extremities. The abdominal parietes were strapped effectively with strips of 2-inch adhesive plaster applied in a laminated manner from behind the back, circling around the abdomen and crossing the laparotomy wound transversely, spaces being cut in the

FIG. 1.



The Carrel technique modified for the peritoneal cavity. A, One end of the Carrel tube of which 6-8 in. are left inside the abdomen. B. Outer drainage tubing ¾ in. in diameter. C, Outer end of Carrel tube connected to irrigator.

FIG. 2.



Explanatory section on a larger scale.

adhesive to allow for drainings and the re-insertion of the Carrel tubes. These strips had to be reapplied once daily.

At each dressing the Carrel tubes leading inside the abdomen were gently twisted round and slightly withdrawn through the outer large drains. They were then fixed by safety-pins as before, and the Dakin fluid was then turned on through the connexions for a few seconds. It was observed that on doing this in the first half-dozen dressings a copious amount of pus was washed out through the large drains. By gently moving the Carrel tube the coagulum at the inner end of the large drain was dislodged, and any free exudate was then washed out by the fluid from the Carrel tube. Gradually each day the Carrel tubes were drawn out, until at the end of 18 days (May 6th) all four were removed and the four small drainage-wounds allowed to close.

Calomel, gr. 1/6, was administered six-hourly for two days. Thereafter the patient obtained a natural action of the bowels and only once had an attack of colic, due probably to an indiscretion of diet. On April 20th, two days after the operation, patient's blood was examined and the count showed as follows: Polymorphonuclears, 52·5; eosinophiles, 5·5; granular basophiles, 3 0; large hyalines, 12·0; and lymphocytes, 27·0 per cent. Leucocytes, 20,000.

Thirty-three days after the operation, having made an excellent recovery, patient proceeded to England.

Remarks.—To sum up, the case appears to us to present certain points of interest: 1. Patient had already, prior to the operation for generalised peritonitis, undergone a laparotomy for a gunshot wound, with suture of several holes in the gut and mesentery. 2. At the time of the second operation his condition was undoubtedly grave. 3. The bacteriological findings at the time of the second operation pointed to a virulent infection. 4. His leucocyte reaction determined on the second day after his second operation pointed to a strong resistance.

There is no doubt that the bursting of the abscess in the rectus sheath was the cause of the diffuse peritonitis. There may be room for doubt that the abscess was a suture abscess There is, however, little doubt that the infection *first developed* in the abdominal wall, originating either from within from contamination of the perforated gut, or from without from skin infection.

The ultimate excellent recovery, without for the moment considering Carrel-Dakin treatment, pointed to the fact that the first operation had been successful so far as repairing lesions in the gut was concerned. One is quite aware that even the worst cases of peritonitis sometimes go straight ahead after operation, but the clinical picture and the whole facts of the case point strongly to something more than coincidence here, and suggest the further investigation of the Carrel technique applied to the peritoneal cavity.

INOCULATION AGGLUTININS.

BY I. WALKER HALL, M.D. VICT.,

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With the Assistance of

I. HILES, M.SC., AND F. NICHOLLS.

(*Report to the Medical Research Committee.*)

IN an earlier communication we recorded the agglutination titres observed in some individuals who had been inoculated previously with antityphoid vaccine. We also gave an account of the interaction of inoculation and infective agglutinins during the acute phases of paratyphoid fevers, and stated the results of concomitant absorption experiments which supported the views of Grattan, Wood, Harvey, Dreyer, and others, that the presence of infective paratyphoid agglutinins is associated with a tissue stimulation which brings about a rise in the agglutinins induced by the prior injection of killed typhoid bacilli.[1]

The advent of a number of convalescents who had been inoculated with the triple typhoid, para. A and para. B vaccine, afforded an opportunity for determinations of the extent and persistence of the inoculation agglutinins thereby occasioned and permitted an inquiry into their interaction.

The results now appended seem to suggest that the inoculation agglutinins which appear in the blood after the injection of dead typhoid, para. A and para. B bacilli tend to raise the titre for typhoid bacilli above that which follows when typhoid bacilli alone are employed, and that these titres are specific absorption titres and not due to co-agglutination.

Methods.—The methods throughout were precisely the same standardised procedures as those stated in our communication to the *Journal of the Royal Army Medical Corps* in September, 1916.

Inoculation Agglutinins for B. Typhosus *only.*

In 272 additional cases the single typhoid vaccine had been given and the results allowed comparison with similar findings in a further 77 cases inoculated before 1916, and another set of 268 cases examined in 1915–16 (Tables I. and III.). The figures in each lot are somewhat similar, although those for 1916 exhibit a larger number of negatives and a higher percentage of units over 650.

TABLE I.—*Typhoid Inoculation Agglutination Units per c.c. of Serum in Cases not Clinically Enteric.*

Inoculated 1916–17.

Weeks since inoculation.	No. of cases.	Units. Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
		%	%	%	%	%	%	%	%
1–10	13	—	—	5	16·6	48·3	20	5	5
11–20	60	3·7	7·3	11·15	21·05	22·15	10·2	6·25	12·8
21–30	69	5·7	5·55	20·05	18·85	26·4	11·85	5·8	5·8
31–40	62	9·4	19·6	27	15·45	13·6	7·55	3·4	4
41–50	32	18·3	19·05	19·05	13·48	11·1	16·25	—	2·77
51–60	32	31·2	23·2	—	16·75	14·35	5·25	2·65	6·6
61–70	4	25	25	25	—	—	—	25	—
Totals ...	272	10·7	12·5	16·9	16·9	19·5	11	4·8	7·7
Inoculated before 1916.									
31–40	6	—	—	66·6	—	16·6	16·6	—	—	—
41–50	9	—	—	—	11·1	22 2	11·1	33·3	11·1	11·1
51–60	24	4·2	12 5	16·6	29·1	25	4·2	4·2	4·2
61–70	38	5·3	—	18·4	18 4	36·8	15·8	—	5·3
Totals ...	77	3·9	9·1	15·6	22·1	28 5	13	2·6	5·2

Inoculation Agglutinins for B. Typhosus *and* B. Paratyphosus A *and* B.

In Table II. the titres obtained from the blood of 310 convalescents are incorporated. These men had all been injected with the triple vaccine. It will be seen that the units for *B. typhosus* show a larger number of higher positives than those found when the single vaccine was injected (Tables I. and III.). The para. A and B units differ considerably, those of para. A being uniformly lower than the para. B, but in both instances the extent and persistence of the agglutinative capacity are greater than what we had been led to expect from previous animal and human experiments.[4 1]

The question, therefore, arises as to the respective parts played by the interacting stimuli emitted by the three types of bacterial protein. It is generally accepted that during infection, and also after inoculation with para. A bacilli, the agglutinin response is meagre and does not persist for a long period, while both typhoid and para. B infections and injections evoke a response in agglutinative capacity which is high and continued. The figures we now present, however, denote a considerable amount of agglutinin content for paratyphoid A and an apparently good immunity at the end of 12 months. Is this difference between the experimental infection and inoculation agglutinin and the specific inoculation agglutinin following injections of triple vaccine an expression of the group stimulation of the tissues by the action of the cleavage of dead typhoid or para. B bacilli, or due to some other factor? The answer to this query might confirm the practice of combining the three emulsions at one injection or point to the advantages of single and separate injections. We hope to bring forward some evidence bearing upon this problem in a later communication.

The Interaction of the Typhoid and Paratyphoid Agglutinins.

The response to the injection of single vaccines is said to be more rapid than that which follows inoculation with a mixed vaccine. This has been established by Castellani for typhoid and paratyphoid bacilli[2] and by Freeman for typhoid and cholera organisms.[3] But the extent of

TABLE II.

Inoculation Agglutination Units for Typhoid, Paratyphoid A and Paratyphoid B where no Infective Agglutinin was found.

Weeks since inoculation.	Number of cases.	Units 3–15 T.	A.	B.	15–35 T.	A.	B.	35–65 T.	A.	B.	65–150 T.	A.	B.	150–350 T.	A.	B.	350–650 T.	A.	B.	650–1250 T.	A.	B.	1250–2000 T.	A.	B.
		Per cent.			Per cent.			Per cent.			Per cent.			Per cent.			Per cent.			Per cent.			Per cent.		
1–5	6	—	—	—	—	—	33·3	33·3	16·7	11·1	33·3	66·6	33·3	16·7	—	11·1	—	16·7	—	16·7	—	11·1	—	—	—
6–10	18	—	11·1	11·1	5·6	—	—	5·6	33·3	11·1	27·7	33·3	33·3	5·6	5·6	16·7	11·1	—	11·1	44·4	16·7	11·1	—	5·5	—
11–15	38	—	13·2	2·6	2·6	7·9	2·6	—	31·6	18·4	36·8	36·8	37·4	7·9	—	18·4	21·1	5·3	5·3	31·6	2·6	2·6	—	2·6	2·6
16–20	43	2·3	18·6	9·3	4·7	23·2	2·3	18·6	18·6	28	30·3	28	34·9	13·9	9·3	11·6	16·3	—	13·9	13·9	2·1	—	—	—	—
21–25	47	—	—	4·2	2·1	19·2	2·1	27·7	27·7	25·6	27·7	38·3	42·6	10·6	8·5	17	14·9	4·2	2·1	17	2·1	6·4	—	—	—
26–30	55	7·3	14·6	10·9	3·6	10·9	7·3	10·9	30·9	18·2	30·9	23·6	49·1	21·8	10·9	7·3	14·6	7·3	—	10·9	1·8	—	—	—	—
31–35	39	2·6	12·8	5·1	20·5	20·5	12·8	2·6	18	25·6	23·1	28·2	23·1	25·1	10·3	28·3	17·9	—	5·1	10·2	5·1	—	—	5·1	—
36–40	36	2·8	25	19·5	13·9	16·7	8·3	11·1	33·3	22·2	22·2	19·5	41·7	11·1	—	—	22·2	5·5	—	16·7	—	8·3	—	—	—
41–45	11	9·1	9·1	9·1	—	18·2	—	18·2	27·3	18·2	27·3	45·4	54·5	9·1	—	9·1	27·3	—	9·1	9·1	—	—	—	—	—
46–50	9	11·1	22·2	11·1	22·2	—	11·1	22·2	44·5	22·2	11·1	22·2	44·5	11·1	—	—	11·1	11·1	—	11·1	—	11·1	—	—	—
51–55	4	—	—	25	—	50	—	25	—	50	—	25	25	—	—	—	25	25	—	50	—	—	—	—	—
56–60	2	—	100	50	—	—	—	50	—	50	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61–65	2	—	—	—	50	50	—	—	—	50	—	—	—	—	—	—	50	50	—	—	—	50	—	—	—
Total number of cases	310	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total percentage for each group of units. Typhoid ...		2·9	—	—	7·5	—	—	13·3	—	—	27·7	—	—	13·7	—	—	17·1	—	—	17·7	—	—	—	—	—
Para. A ...		—	13·6	—	—	15·2	—	—	26·8	—	—	30	—	—	6·1	—	—	4·5	—	—	2·9	—	—	0·9	—
Para. B ...		—	—	9	—	—	5·4	—	—	22·5	—	—	40	—	—	14·1	—	—	4·5	—	—	3·9	—	—	0·6

immunity developed after two or more weeks is the same for single as for mixed emulsions. From the clinical standpoint, however, Coppinger and Gibson found that when the triple vaccine was used the reaction begins earlier and is more intense than when the single typhoid emulsion is injected.

During an acute attack of paratyphoid fever in a man previously inoculated with typhoid vaccine the inoculation typhoid titre is very frequently increased.[1] The figures we include in Table III. suggest that an increase in the inoculation typhoid titre occurs also in the presence of inoculation agglutinins induced by the injection of para. A and B bacilli. In 310 men in whose blood there appeared all the three agglutinins, and who had not been the subjects of typhoid-paratyphoidal infection, the typhoid units yielded a larger percentage of high units than were met with in 617 other men who had been inoculated with typhoid bacilli only.

TABLE III.—*Inoculation Agglutination Titres for Typhoid Bacilli.*

—	No. of cases.	Units. Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
Inoculation—With typhoid only:									
1915–16 A.	268	2·4	15·3	29·9	23·2	19·5	5·1	4·0	0·6
1915–16 B.	77	3·9	9·1	15·6	22·1	28·5	13	2·6	5·2
1916–17.	272	10·7	12·5	16·9	16·9	19·5	11	4·8	7·7
With typhoid and para. A and para. B: 1916–17	310	—	2·9	7·5	13·3	27·7	13·7	17·1	17·7

Whether the typhoid agglutinin interacts similarly with the paratyphoid agglutinin production is a problem upon which we cannot offer any evidence at the moment, but the subject seems worthy of inquiry, and we have accordingly instituted experiments towards its elucidation.

Agglutinin Units following the Injection of Triple Vaccine in 356 Men.

The findings so far discussed relate chiefly to the interaction of agglutinins. There remains still the broader question of the general bulk results which have been yielded by sera obtained from men inoculated with the triple typhoid, para. A and B vaccine. Here we have considerable difficulty in presenting any complete survey, as it has not been possible always to obtain a precise account of the type of vaccine injected. Making use, however, of the general statement that the triple vaccine came into widespread employment in the early days of 1916, we have been able to present a rough account of the agglutination units determined. Had we been dealing with the acute phases of the diseases which caused the home-coming of the men, we should have found it more easy to place certain anomalous instances within definite categories. It was necessary to rely on experience and intuition in these cases to a greater extent than we care to do, but it seems worth while, perhaps, to attach Table IV. as a rough estimate of the success and failure of response to the triple vaccine. The negative findings are placed under the heading of "Less than 3" units of agglutinin, although the majority of these failed to give agglutination in dilutions of 1 in 10 serum. Speaking generally, the typhoid negatives are fewer than those met with after the injection of the single vaccine, while those following para. A and B are more numerous.

TABLE IV.

Agglutination Units after Use of Triple Vaccine ... 356 men.

		Per cent.
Cases showing triple inoculation agglutination units ...	310	87·1
,, in which typhoid yields under 3 units	1	0·3
,, ,, Para. A ,, ,, ,, ...	15	4·2
,, ,, Para. B ,, ,, ,, ...	30	8·4
Total	356	100

Relation of Low Units to Weeks since Inoculation.

Weeks since inoculation.	Typhoid.	Para. A.	Para. B.	Weeks since inoculation.	Typhoid.	Para. A.	Para. B.
6–10	—	1	1	36–40	—	2	1
11–15	—	2	2	41–45	—	0	2
16–20	—	1	10	46–50	—	1	—
21–25	—	2	5	51–55	—	1	—
26–30	—	3	4	56–60	1	1	—
31–35	—	1	5	Totals	1	15	30

We thank Lieutenant-Colonel J. P. Bush, C.M.G., Lieutenant-Colonel J. Michell Clarke, and the whole of the staff of the Second Southern General Hospital, for the facilities they have so kindly provided.

Summary.

1. Additional observations upon the inoculation agglutinins following injection of killed typhoid bacilli are recorded. They confirm previous statements.

2. The agglutinin content after injection of the triple vaccine shows the response to be as persistent as when the single vaccine is employed. The units for paratyphoid A are the lowest, next comes paratyphoid B, and finally typhoid bacillus.

3. When compared with the results following inoculation with *B. typhosus* only the use of the triple vaccine is associated with an increased number of typhoid agglutinin units.

4. These findings in bulk confirm for man the observations which Dreyer and Ainley Walker record in their

experiments upon rabbits—namely, that after immunisation with dead *B. coli*, the subsequent injection of killed emulsions of *Staphylococcus aureus*, the bacillus of Friedländer, or a streptococcus increases the production of the specific primary agglutinins, so long as the animal retains any measurable degree of acquired immunity.[5] Perhaps the figures may be interpreted so as to carry the matter a little further and to suggest that inoculations with allied, or group, organisms point to the probability that typhoid and paratyphoid bacilli differ so much in their essential metabolism as to classify them individually as heterologous organisms. The results of our previous absorption experiments and their inferences as to the absence of co-agglutinins in sera containing mixed antibodies lend support to the surmise.[1]

Literature.—1. Walker Hall: Journal of R.A.M.C., September, 1916 (with literature). 2. Castellani: Soc. of Trop. Med. and Hyg., November, 1915. 3. Freeman: Ibid. 4. Coppinger and Gibson: Journal of R.A.M.C., 1916, p. 581; and Harvey and Gibson: Ibid., 1915, p. 525; and Cummins and Cumming: Ibid., October, 1912, and September, 1913. 5. Dreyer and Ainley Walker: Journal of Path. and Bact., xiv., 30. 6. Hachtel and Stoner: Journ. of Infect. Diseases, 1916, 19, p. 322.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF VINCENT'S INFECTION INVOLVING MOUTH, EYES, AND PENIS.

BY F. B. BOWMAN, M.B. TOR.,
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SINCE publishing a preliminary report on "Infectious Stomatitis among Troops" in 1916[1] many cases of this serious condition have been seen. That cited here would seem to be of sufficient interest to warrant an individual report.

Case history.—Captain ——, aged 30. Always had good health until the present illness occurred. About March 1st, 1917, he noticed that he began to lose his voice. He does not describe any pain in connexion with this, but it seemed to be due to a sense of constriction in the throat. The glands in the neck were not tender. The condition gradually became worse, and on March 15th, when instructing a party in trench work at night, he had a severe chill and a cough developed. He then noticed soreness of the eyes with watering, and had great tenderness of the gums. On March 19th he was admitted to hospital.

Examination on admission.—Temperature 102° F. Greatly depressed, feels chilly, and can eat nothing but fluids because of the soreness of the lips and inside of the mouth. He was seen by me on March 21st. Examination showed a very severe conjunctivitis, with a large amount of thin discharge present containing flakes of whitish material; the conjunctivæ were red, a certain amount of photophobia present. The mouth was half opened and the lips covered with angry herpetic-looking ulcers, some of which were covered with a fragile whitish membrane. These seemed to be confined to the lips, and had not extended to the surrounding skin. On account of the pain it was impossible to open the mouth, and it was very difficult to retract the lips. The gums were reddened, the teeth bathed in pus, and pressure on the gums caused severe bleeding. The hard palate was covered by a whitish membrane, which came away easily, leaving a bleeding surface. The throat, which could be seen only partially, was covered with a membrane also, but there was no evidence of any deep ulceration. Smears were made from the eyes and from the ulcerated areas in the mouth, as well as from the gums. These showed large numbers of Vincent's organisms (spirochætæ and fusiform bacilli).

A mixture of arsenic and ipecac., as recommended in a previous paper, was used three times daily as an application to the gums and lips, and also as a mouth wash. Boracic compresses were advised for the eyes. In 24 hours the mouth felt "easier," although it was impossible to open the lips. After three days from the time that I had first examined him the patient confided in me that he had a peculiar sore on the penis, and this on examination was found to be a small red ulcer with a membrane over it surrounding the meatus. Smears showed Vincent's organisms present in large numbers. For treatment the same solution as that used in the mouth was applied on a small pad of cotton-wool, and changed three or four times a day. The ulcerated area was completely healed within a week. The Wassermann reaction was negative on two occasions. During the second week after admission the patient developed a severe pleuritis, with a fairly large amount of fluid present; but this apparently was simply coincident, and had no relation to the other conditions described here, although the chill and cough, which developed early in the disease, were the first signs of pleuritis.

When last seen by me the mouth, eyes, and penis were entirely healed, and the marked depression which was present at first had disappeared. This was one month after his admission to the hospital.

Summary.—The case reported here is particularly interesting from the fact that three separate and distinct areas covered by mucous membrane were infected by Vincent's organisms. The primary infection was probably in the mouth and had been transferred to the glans penis and conjunctivæ by means of the fingers. Treatment with the following prescription as a mouth wash, with directions that the mixture should not be swallowed, quickly cleared up the condition:—

℞ Vin. ipecacuanhæ ... ... ℥ ss.
Glycerini ... ... ℥ j.
Liq. arsenicalis ... ... ad ℥ j.

[1] Proceedings of the Royal Society of Medicine, 1916, vol. ix. (Medical Section), pp. 51-60.

ANOTHER CASE OF MALARIA CONTRACTED IN ENGLAND.

BY R. LOY WILCOX, M.R.C.S., L.R.C.P. LOND.,
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G. T., aged 20 years, had an abdominal operation at Salonica for wounds received in action on Nov. 28th, 1916, but has been in this country for over three months. He was admitted to the Park Hospital certified to be suffering from scarlet fever on July 27th, with the history of vomiting and sore-throat on the previous day.

On admission he had a faint punctate erythema, the tongue was heavily furred, and the fauces were swollen and injected. The temperature was 104°F., but there was no rigor. The temperature continued irregular and at midnight July 30th-31st was 104°, but again there was no rigor. It was normal on the morning of July 31st and remained normal until 7.15 P.M. on August 1st, when the first rigor occurred, the temperature rising to 104°. By midnight it was normal again. A careful examination of heart and lungs revealed nothing abnormal.

On August 3rd, at 2.30 P.M., he awoke from his sleep and asked for a hot drink, as he thought an attack was coming on. A rigor followed immediately, and then malaria was thought to be the cause of the trouble, and the man, who had previously been taking sodium salicylate, was put on quinine sulphate 3 gr. every four hours. Another rigor occurred on the 5th, and the dose of quinine was increased to 6 gr. every four hours. Afterwards there were no more rigors and the man rapidly became convalescent. On the 9th the dose of quinine was reduced to 3 gr. every four hours, and on the 13th it was omitted altogether. A blood film taken during the height of an attack was kindly examined by the pathologist of the military hospital from which the man came and he reported that the tertian parasite was present.

The rash present on admission disappeared in a day or two and as neither the tongue showed any trace of peeling at any time nor was any desquamation seen the diagnosis of scarlet fever was abandoned and the man discharged well on August 21st.

I am indebted to Dr. T. F. Ricketts, medical superintendent, for permission to publish this case.

THE Local Government Board has approved of the appointment by the Bournemouth town council of Mr. William Bertram Lawrence as tuberculosis officer for the period of the war, subject to his services not being further required by the War Office.

MEMORIAL BED TO THE LATE MR. JOHN PLATTS.—As a memorial to the late Mr. John Platts his sister and legatee, Mrs. M. A. Shipley, has endowed a bed in the wards of the Leicester Royal Infirmary. Mr. Platts was a well-known representative of the firm of Messrs. Southall Brothers and Barclay, manufacturing chemists, Birmingham, and for many years was closely associated with medical work in the neighbourhood of the hospital. This fact is recorded on a memorial plate over the bed.

Reviews and Notices of Books.

The Thyroid Gland in Health and Disease. By ROBERT MCCARRISON, M.D. R.U.I., D.Sc. Belf., F.R.C.P. Lond., Major, Indian Medical Service; Lauréat de l'Académie de Médecine, Paris. With numerous illustrations. London: Baillière, Tindall, and Cox. 1917. Pp. 286. Price 12*s.* 6*d.* net.

FROM the time of Hippocrates and Aristotle onwards impure drinking water has been held by the majority of physicians to be the cause of goitre. But it is only within comparatively recent years that we have approached a precise knowledge of the ultimate causes of disease of the thyroid-parathyroid glands by the correlation of facts and inferences based upon the results of experiments upon animals, clinico-anatomical observations upon man, and epidemiological investigations. It is a great satisfaction to recall the fact that many British physicians and physiologists have acted as pioneers in important contributions to our knowledge of the thyroid gland in health and disease, and we welcome this latest valuable pioneer work of Major McCarrison, which sets forth in a lucid, comprehensive, and interesting manner a subject which he has studied experimentally, epidemiologically, and by clinico-anatomical observations for the past 14 years. During this time he has contributed numerous original papers to medical journals and societies, including the Proceedings of the Royal Society, bearing upon goitre and allied subjects. Major McCarrison speaks authoritatively as a physician of experience, and throughout all three parts into which the work is divided there is exhibited a most extensive knowledge of the literature.

The first section deals with the thyroid and parathyroid glands in health; the second with the factors which cause them to depart from health; and the third with the morbid states of goitre and cretinism, tetany, myxœdema, and exophthalmic goitre. In the appendix there are two series of cases showing the effects of intestinal antiseptics on goitre, as well as a brief summary of the author's more noteworthy epidemiological and experimental observations.

In reviewing this important contribution to medical literature we shall best serve the interest of the profession by briefly referring to Major McCarrison's conclusions regarding the causation, prevention, and treatment of endemic goitre, a subject of great importance, seeing that "in India at the present time there are not less than five million persons afflicted with goitre, while half a million is a low estimate of the number who suffer from its congenital manifestations." It was generally believed that permanent hardness of the water was the cause of goitre—e.g., Derbyshire neck was attributed to this; while not denying that it may be to some extent a contributory factor, Major McCarrison's observations show that it is not an essential cause. Within recent years the many theories as to the causation of endemic goitre have been reduced to the following: (1) Chemical ingredients of drinking water; (2) geological peculiarities of the soil, imparting to the soil a specific colloidal poison; (3) faulty nutrition; (4) living micro-organisms. The author claims that his experimental and epidemiological observations prove that living organisms are the essential cause of the disease, and he puts forward the following premises as proof that fæcal contamination of the water-supply by a living and specific micro-organism is the cause of goitre. 1. In villages where goitre prevails this disease shows a steady increase in proportion to those conditions which increase the impurity of the water by fæcal contamination. 2. He claims to have produced goitre experimentally in man by ingestion of the residue left on the candle of a Berkefeld filter after filtration of goitrigenous water. This residue when boiled does not cause goitre. 3. The administration of beta naphthol and thymol and other intestinal antiseptics may cause the disappearance of the goitre in young subjects. 4. The researches on trout by Marine, Lenhard, and Gaylard demonstrate that fish confined in tanks one above the other on a single water-supply exhibit an increasing thyroid hyperplasia in the series from above down. 5. He claims to have produced goitre in rats and goats by feeding them on fæcal material from goitrous and even non-goitrous subjects; also from cultures, aerobic and anaerobic. The anaerobic are the more potent. 6. Congenital goitre with cretinism and parathyroid disease can be produced experimentally by feeding the mothers throughout pregnancy with these cultures. Photographs of men and animals and photomicrographs of sections of the glands are given. Finally, Major McCarrison claims that vaccines prepared from intestinal organisms are capable of causing the disappearance of recent cases of goitre when injected in appropriate doses at weekly intervals. We are of opinion, however, that further observations will have to be made before the value of autogenous vaccines in the treatment of goitre can be accepted as proven. With regard to the infective organism, Major McCarrison claims that it lives in the soil of infected localities, and particularly in soil which contains a high proportion of organic matter of human or animal origin. It seems that "the great source of the disease is the infected individual, and that he is the producer, the reservoir, and the distributor or 'carrier' of the infecting agents." The author, therefore, implies that there is a specific organism capable of producing goitre, which exists in man living in districts where goitre is endemic. This organism has not been isolated and obtained in pure culture; in fact, the observations on trout would seem to point to the fact that normal organisms of the fæces passing through the intestinal canal of this fish acquire an increased toxic influence on the thyroid gland. In the author's experiments on rats he states that ingestion of fæcal material from even non-goitrous subjects will produce goitre, which rather militates against his experiments, proving that there is a specific goitrigenous infective organism. Major McCarrison has shown that in mountain villages where one is situated above another there is a correlation between the increase of fæcal contamination of the water-supply and the prevalence of goitre. Might it not be worth while to make plate cultures and counts of the different fæcal organisms in the water-supply of a series of such villages? It would also be of interest to ascertain whether there was any modification, morphological or cultural, in the organisms found in the water-supply to the villages where goitre is most prevalent.

It is interesting to note that the author does not consider that Graves's disease is the direct outcome of the flooding of the organism with thyroid substance, as it is stated to be by Biedl. According to Major McCarrison, it is not the escape of excess of the thyroid secretion which is at fault, but a bacterial toxin which stimulates the gland to increased activity. The remedy, therefore, is to seek the source of the bacterial toxin and eliminate it. He enters a protest against the tendency of some surgeons to operate in all early cases as a routine procedure.

We can cordially commend this valuable work, so rich in original thought and observation. Naturally all the links of the chain of evidence upon which our present knowledge of thyroid-parathyroid disease is founded are not of equal strength and probable durability. Some of the links contributed by the author will require strengthening by further investigation and by confirmation of independent observers.

The book is interesting in style and lucid in exposition, is well printed and illustrated. We congratulate the author on having made a noteworthy contribution to British medicine.

LIBRARY TABLE.

Daily Drill for the Voice. By ROSE I. PATRY. Published by the author at 3, Lower Seymour-street, Portman-square, London, W.—In this pamphlet on voice management Miss Patry has done a sound and useful piece of work. The want of skilled attention for sufferers from shell-shock has been keenly felt by those coming in contact with them. There is not only the need for medical help, but for help from persons skilled in voice-production and voice-correction. There are difficulties in the way of supplying the latter kind of assistance to many of the victims who require it most, and the possibility of helping themselves, as indicated in "Daily Drill for the Voice," will be most useful information. The book contains six groups of exercises for control of breath, voice, and body, graded with obvious precision. Exercises in regular control of the breath and in use of the voice are combined with movements of the arms, ribs, chest, and with such ordinary movements as writing, walking, rising from a seat, so that the recovered or corrected voice is from the first placed in the circumstances of

daily life. Care, too, has been given to the amount of mental effort required in performing the exercises, the early ones being more mechanical than the late ones. One point that might offer some difficulty to the inexperienced reader is the exact meaning of "the initial sound" of a consonant. A list of the phonetic sounds as used in the pamphlet might with advantage have been added to the introductory directions and so have removed any doubt on the part of the learner. Thus we should have had explained such an exercise as "Make the shape of the mouth of the following consonants ..... W, W, W. ....." To the uninitiated what is the shape of the mouth for "W"? The pamphlet contains no exercises dealing with such sounds as "th," "sh," "ch," "j," or difficult combinations, e.g., "pl," "gr," "st," "sk," which leads us to suggest that Miss Patry should produce a sequel in the shape of a series of exercises of a higher standard of difficulty. Meanwhile any soldier or sailor whose speech is affected may derive invaluable benefit by using "Daily Drill for the Voice."

A Farmer in Serbia. By ELLEN CHIVERS DAVIES. London: Methuen and Co. 1917. Pp. 248. Price 6*s.* net.—This is a very readable book, composed to some extent of articles which have been contributed to the *Manchester Guardian*, the *Morning Post*, and the *Yorkshire Post* enlarged into a diary, bearing dates from the first summer of the war until the time when Bulgarian defection led to the over-running of Serbia by the enemy. The book tells an interesting and pathetic story simply but quite poetically. It is easy to realise the beauty of the scenes in which many of the struggles were enacted, as well as to comprehend what a horrible tragedy it was that the Allies were unable to make good the Serbian resistance. The proceeds of the sale of the book will be given to the Serbian Relief Fund.

Health Survey of New Haven. Yale University Press, New Haven, Connecticut. 1917. Pp. 144. Price 75 cents net.—This Survey was prepared at the request of the Civic Federation of New Haven and is now published in pamphlet form by Yale University, the cost being defrayed from the Anna M. R. Lauder Memorial Foundation in the Yale School of Medicine. The record of an exhaustive sanitary survey is extremely practical, and each description of existing positions is followed by a definite recommendation where a method of reform has suggested itself to the authors. The one essential need made clear by their investigations is that of providing the health department of the city with six efficient and well-qualified divisional directors, who could supervise the work of their subordinates and aid the health officer in the organisation and development of particular lines of energy. The expansions of the work of the department of health which appear cardinally essential to the authors include the re-arrangement of the work of the Board of Health, the strengthening of the various staffs with a more reasonable division of their labours, the reorganisation of school inspection with the provision of school clinics, and the appointment of an expert on tuberculosis to develop a campaign against the disease. The cost of the suggested additions are estimated at about £7000 a year, an increase of per capita expenditure for health work in the city from 26 to 48 cents annually. This strikes us as being a remarkably moderate figure. The public health authorities of English cities having a comparable population of something between 100,000 and 150,000 might with advantage study this well-arranged pamphlet. All the modern problems of preventive medicine receive notice, and in many places there are indications for reform which would be as applicable in a British as in an American city.

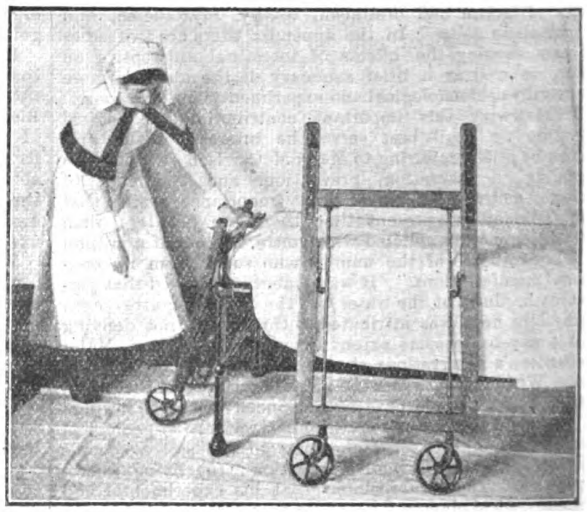
Manual of Chemistry. By W. SIMON, Ph.D., M.D., and DANIEL BASE, Ph.D. Eleventh edition, thoroughly revised. London: Baillière, Tindall, and Cox. 1917. Pp. xvi. + 648. Price 18*s.* net.—In the preparation of this edition the chief change made has been the omission of the chapters on light and electricity of the previous editions, though the articles on the spectroscope and the polariscope have been retained, since their applications in analytical work are indispensable. This course has made room for much new matter, particularly in the first subdivision of Section II. dealing with the non-metals. In this section some space is given to an account of reversible reactions and chemical equilibrium. In previous notices of this book we have always expressed an appreciation of its clearness of statement, its logical sequence of facts, its remarkable coloured illustrations of tests, and its general soundness on both theoretical and practical questions. The student in the laboratory will find this book of considerable service, even though he be a beginner.

A Laboratory Manual of Organic Chemistry for Medical Students. By MATHEW STEEL, Ph.D. New York: John Wiley and Sons, Inc. London: Chapman and Hall, Limited. 1916. Price 6*s.* net. Pp. 193.—A useful series of tests is here given for more or less familiar organic substances, setting forth their properties as well as those reactions which serve for their detection. Particular attention has been given to the selection of experiments which are of special interest to medical students. The sections on alkaloids, proteins, amines, and amides are the best examples of this plan. In the directions given in making the tests the use of definite quantities of reagents is enjoined, which has the double advantage of obviating waste of material, and of securing a satisfactory response to the test. The book presents a sound practical course of laboratory teaching confined to organic substances.

New Inventions.

THE "TOWNSEND-LOCK" BED LIFT AND TRANSPORTER.

RECENTLY we noticed two devices for moving the sick and their beds. We here describe a bed lift and transporter which is the invention of two members of the Inquiry Bureau of the 2nd Southern General and Beaufort War Hospitals, Bristol, and their Auxiliaries. The apparatus is simple, light, strong, and effective, and affords a ready means of wheeling a patient in bed, without any jarring or discomfort,



into the open air, even over grass or uneven ground. As will be seen from the illustration, the invention consists of two square frames (one for the head and one for the foot of the bed) running on swivelled rubber-tyred wheels. The frames are hooked under the top bar of the bed which is levered up by pushing forward the bottom of the frame. The frame is then clamped securely in position by hooks sliding on its face. No lifting is required, the leverage being equal to any normal load on the bed, and the adjustments can be made in about 15 seconds. The apparatus is adjustable, and can be fitted to almost any ordinary hospital bed.

Any proceeds resulting from the commercial use of this invention, which is priced at £4 10*s.*, will be devoted to the funds of the Inquiry Bureau. Only one set of frames is required for any number of beds.

Further details may be obtained from the Honorary Secretary, Inquiry Bureau, 39, Broad-street, Bristol.

At The Front—

Since the beginning of the war tens of thousands of packages of



have been used in the Hospitals of France alone.

Physicians and surgeons in His Majesty's service on duty in France should bear in mind that Antiphlogistine obtained from our Paris Laboratory, No. 116 Rue de la Convention, is composed of the same C.P. ingredients and compounded according to the same formula as the British Antiphlogistine, made at No. 41 St. Ann's Road, Bow, London, E. 3.

THE DENVER CHEMICAL MFG. COMPANY

BOW, LONDON, E. 3.

THE TREATMENT OF VENEREAL DISEASES.

Recurrent Fever
SYPHILIS

GALYL

Framboesia
Sleeping Sickness

GALYL is as effective as SALVARSAN or NEOSALVARSAN on Spirochætes and Trypanosomes, more rapid in action, and free from the neurotropic and congestive action of these preparations.

FOR INTRAVENOUS INJECTIONS:—
(Fig. 1)

(1) **DILUTE.**—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.

(2) **CONCENTRATED.**—A special outfit containing one dose GALYL, one ampoule sterilised solution, and one small filter is supplied.

DOSES.
0·20—0·25—0·30—0·35—0·40.

(3) FOR INTRAMUSCULAR INJECTIONS:—
(Fig. 2)

GALYL is supplied in **GLUCOSE SOLUTION.**

DOSES.
0·10—0·15—0·20—0·30.

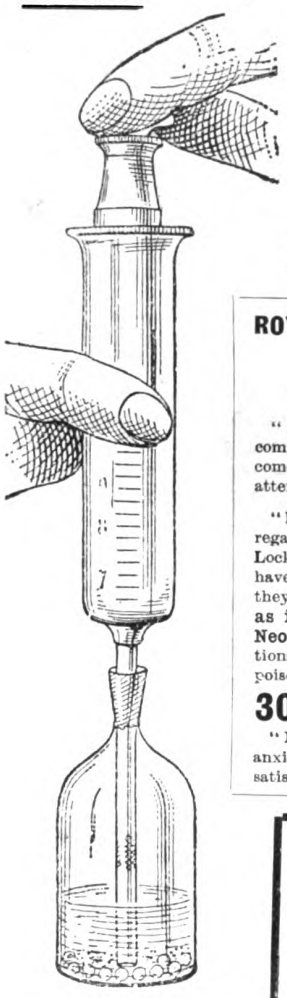


Fig. 1.

ROYAL COMMISSION ON VENEREAL DISEASES.

Final Report of the Commissioners.

SUBSTITUTES FOR SALVARSAN.

"..... another French substitute, **GALYL**, a compound of arsenic and phosphorus, has recently come into prominence, and its use has been attended with considerable success."

"Favourable reports have also been obtained regarding the preparation **GALYL**. At the Male Lock Hospital 1000 injections of this substance have been administered, and it is reported that they have been attended with **as good results as in the cases treated by Salvarsan and Neosalvarsan**; in no instance were the injections followed by reactions indicative of arsenic poisoning."

3000 injections (intravenous) were given in one of our **Service Hospitals.**

"No case has given the slightest cause for anxiety, and the clinical results are very satisfactory." *Staff Surgeon's Report.*

THE NEW INTRAMUSCULAR GALYL.

The GALYL is in the form of a Sodium Salt in a weak solution of glucose. This is much easier to use and more rapidly absorbed than the oily emulsion. It is in every way identical with the intravenous—efficacy, dose, price, &c., only differing in administration.

"The results are excellent, both immediate in the clearing up of evident lesions and ultimate, as proved by the Wassermann test. Personally I have used this preparation in over 400 injections with the best results and without the slightest mishap or inconvenience to the patient.

"Yours faithfully, Dr. ——."

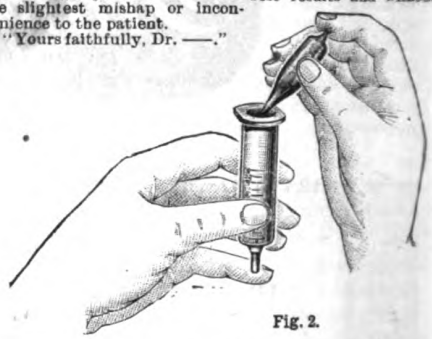


Fig. 2.

The technique is simple

Fig. 2 shows the ampoule of Galyl being emptied into the syringe barrel—the needle is now fixed on the neck of the syringe and the plunger inserted into the barrel. The injection is then ready for administration.

HECTARGYRE

(Mercurial Salt of Hectine)



ARSENIO-MERCURIAL TREATMENT

Hectine is a soluble Arsenical derivative with an extremely low toxicity; and combined with mercury is well tolerated even where prolonged treatment is necessary, such as severe cases of intractable Syphilis, in which it has yielded highly.

FURTHER LITERATURE ON REQUEST.

ARSENIO-MERCURIAL TREATMENT

SATISFACTORY CLINICAL RESULTS.

As a treatment following GALYL, or ab initio in all stages of the disease: Hectargyre is very effective and rapid. The injections give little or no pain.

FOR INTERNAL ADMINISTRATION.

Hectargyre Pills.
Hectargyre Drops.

THE ANGLO-FRENCH DRUG CO., Ltd., Gamage Building, LONDON, E.C. 1.
Telephone: HOLBORN 1311. (Late M. BRESILLON & CO.) Telegrams: "AMPSALVAS, LONDON."

THE LANCET.

LONDON: SATURDAY, OCTOBER 6, 1917.

The Treatment of Wounds in War.

Professor W. W. KEEN has not been at the front, but in his eightieth year he is a surgeon of large experience and breadth of view, and his report[1] on the treatment of war wounds, compiled at the request of the National Research Council of America, will be studied with profit by many whose daily work brings them in contact with the wounds of war and with the controversies thereon arising. The Atlantic, while reducing magnification, may at the same time improve perspective. After three years of fighting the number of different methods of treating wounds is still so great as to prove that there can be no one preferable technique, and this would be expected when we remember the diversity of circumstances and environment in which the injuries are inflicted. General principles may evolve, though a one and only procedure need not be expected. But many of the new remedies brought forward during the war have been acclaimed by their inventors as almost a panacea for all sorts and conditions of wounds, and that there is no small amount of truth in many of the claims that are made proves simply that in dealing with an enormous mass of wounded material large groups having similar manifestations have been found. Various new conditions have been met with, and the new lines of treatment have been devised for the most part to deal with these new conditions. The sepsis seen in many of the wounds in the present war is of a virulence rarely if ever encountered in civil practice and almost unknown in previous campaigns. Gas gangrene and tetanus were rife in the early months of the war. The long interval between the infliction of the injury and even the first dressing, which in some sections of the line was bound to occur, led only too often to the penetration of microbes deeply into the wounds; and when close trench war prevailed everywhere great difficulties were experienced in bringing in the wounded. But now that the movement on the western front, which we are considering to-day, is towards the east always, so that the ground over which the advance is being made remains in our hands, the wounded receive aid much earlier than was formerly the case, and some of the older problems have disappeared.

The skill and inventiveness of the army surgeons, their civil colleagues, and the pathologists have been exercised to the utmost, and the results of treatment have steadily improved. Tetanus has almost disappeared; every wounded man receives one or more doses of antitetanic serum as a matter of routine, and the effect is intensely striking to all workers in military hospitals. The treatment of gas gangrene presented what our American allies would term "a tough proposition." Various methods were proposed and tried, but until recently—sad to think!—the safest treatment too often was to perform a flapless amputation, so that the perfect drainage and the exposure of the anaerobic organism to the air led to its elimination. Now the claim has been made for a new serum that it will deal as effectively with gas gangene as the tetanus antitoxin deals with tetanus. If this claim should prove well founded, a valuable addition will have been made to our armamentarium, and we hope that further work in this direction may clear up all the doubts. For the treatment of wounds infected with the ordinary pyogenic organisms many procedures have been devised. One of the most valuable methods of lessening the sepsis, and one which often permits of healing by first intention, is excision of the wound so that a large proportion of the entrant micro-organisms is mechanically removed; while the tissues damaged by the toxins are taken away, and clean healthy tissues are brought together. Even though a true union by first intention may not always be obtained, yet the suppurative process is immensely weakened, and healing is promoted. The whole work of Sir ALMROTH WRIGHT in these directions has tended towards simplification and towards a scientific comprehension of the underlying pathology of the conditions met with. For the treatment of wounds which have already become infected, but cannot from their extent be excised, Sir ALMROTH WRIGHT'S researches have been invaluable, while two methods have emerged to which the authors' names have been properly attached. CARREL'S method of using Dakin's hypochlorite solution, and RUTHERFORD MORISON'S employment of "B.I.P.P.," although differing widely in the means employed, are both undoubtedly effective in preventing and reducing sepsis in wounds, and each has proved useful in promoting their healing. By the Carrel method it is claimed that in nearly all cases of wounds in which the infection has not progressed too far it is possible by the regular instillation of the hypochlorite solution to render the wound germ-free within a week or two, and the asepsis is guaranteed by a bacteriological test; and when this aseptic stage is reached the wound may be sutured and it will heal without suppuration. The Carrel method is the only one described in detail by Professor KEEN, as, judging by published statements, he finds the results superior to those of any other method. The work of Dr. A. DEPAGE on compound fractures at La Panne has specially impressed him. The "B.I.P.P." treatment consists in filling the wound with a paste of bismuth subnitrate, iodoform, and paraffin, and when it is closed with sutures in many cases the wound heals rapidly with a minimum of suppuration.

In the present issue of THE LANCET appears a paper by Major JAMES PHILLIPS, R.A.M.C., who has worked at the Bradford War Hospital, and from a study of the various forms of treatment he has evolved the "Bradford method," with which he has

[1] The Treatment of War Wounds, by W. W. Keen, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. W. B. Saunders Company, 1917. Price $1.75.

obtained excellent results. It is essentially a combination of these two methods, the Rutherford Morison and the Carrel treatment, preference being given to the one or the other according to the lesion, and sometimes the two are employed in turn. Success depends not only on the actual method itself, but also on the application, and this is why the inventor of a new method may obtain results superior to those of others. If a surgeon is working on lines in which he does not believe, it is unlikely that he will meet with success; he does not carry out instructions with the care and thoroughness that he would use if he believed absolutely. Little details vital to success will be omitted or imperfectly carried out, and the method will be dismissed as of little or no value. At the first introduction of antiseptic surgery surgeons who did not believe in it condemned it as useless, "for," said they, "we have used carbolic acid in the wound and pus was formed as usual," forgetting or ignoring that the principle of antiseptic surgery is not merely the employment of carbolic acid. There is no finality in surgery, and we certainly have not reached any finality in the treatment of wounds in war; but it is certain that in the past three years we have learned much of the treatment of these wounds, we have been able to save life and to prevent much pain and delayed healing.

Air-Raid Psychology and Air-Raid Perils.

IN certain schools of biological thought, as we had occasion to point out when discussing the subject of air-raid psychology a few weeks ago, a favourite theme is the adaptation of the organism to repeated sense stimuli of a given type, whereby appropriate reflex action by way of defence or otherwise is installed. Now the aerial bombardment of crowded cities is a recent development of "civilised" warfare; our sense organs have not in any general manner become adapted to the stimuli, with the result that, among the population taken in mass, definite defensive behaviour has not been evolved as a normal course. But although it would be too much to expect that in so short an experience of aerial bombardment the public conduct should have devised at once the wisest courses of action in circumstances which are not only very trying in themselves but very diverse in their dangers, yet it may be claimed that in London and its environs the inhabitants have already gone a long way towards behaving in bulk with bravery and prudence. It is a truism that a crowd is impulsive and mobile, but their common impulse and consequent movement, when properly directed, spread rapidly, grow wiser and stronger as they spread, and tend to shape the behaviour of the more unstable members with a force that is augmented by geometrical progression. London behaved well at the beginning in face of the new perils, and the beginning is being justified by the sequel.

London during last week endured five aerial raids of varying severity, and each of those raids had as furious an intent as any of the others. During this week, as we write, London has been the objective during two nights of similar exhibitions of frightfulness, and there is not a doubt that the immense populations involved have learned with speed and uniformity lessons which have saved many lives, which will save more lives, and which—this is of infinite importance—have enabled them to analyse their dangers, estimate the severity of those dangers, and front them therefore with that spirit of comprehension which is the basis of fortitude. The experiences of London happen to be our text, but they exemplify, of course, the experiences of all centres of aerial attack. At the present moment London is to the enemy the symbol of our national might and its inflexible resolves, and is, therefore, the object of their most determined onslaughts; but lessons learnt from events in London are applicable throughout the zone of war. The people of London, including those of the densely-populated rings without London proper, now appreciate that their risks can be divided into two—namely, those from the bombs of the enemy and those from the defensive gun-fire; and they know, further, that by as much as the hideous din and luridly magnificent atmospheric effects constitute the most terrifying stimuli to their senses, by so much is fear misplaced, because it is the work of our defensive machinery, as the enemy in vain tries to penetrate, which accounts for nearly all which they can hear or see. The Home Office has drawn up a leaflet containing a summary of the advice which has been given so far to the public, with the additions and modifications which events appear to justify. An intelligent reading of this leaflet proves how small are the risks to which the bulk of the population is submitted from the supreme danger of being bombed by the enemy, but how great are the chances of catastrophe from the avoidable risks accompanying our own defensive activity, while it is this activity which rings us round for long periods and on repeated occasions with the tumult of hell. Almost all of what we hear and what we see—and the less we try to see anything the better—amount to sound and fury, and although they are far from signifying nothing, the simple precaution of taking cover leads to probable safety.

The evidence of medical men who reside in the attacked centres or who have been present quickly on the scene of an accident, or who have been summoned to attend the victims of shock, all goes to show that the inhabitants of London have steadily improved in courage and calm as they have learnt the measure and the sources of the dangers to which they are subjected; and we are glad to state positively that among those whose natural anxiety has been greatest—and there is not a soul among us who does not feel anxious during an aerial attack for himself as well as for those nearest and dearest to him—the power of recuperation has manifested itself with great rapidity. The recurrence of the dangers has tended not to exaggerate those dangers, as the enemy hoped fondly would happen if attack followed often upon

attack, but rather has made the circumstances more tolerable; and it is this growing bravery which has become a feature of our psychology, and which accounts for the fact that a short relief from strain is almost invariably followed by a complete recovery of balance.

Training in Citizenship.

THE prophylaxis of responsibility has never been a success in this country and the adolescent boy or girl exposed to the full brunt of independence without any previous experience often succumbs to attacks of wrongheadedness, with results which may in one social class lead only to distressful family relations and in another to collision with external authority. The recent outbreak of juvenile crime is an example of the latter which cannot be set aside as a matter solely for punitive action. The Bishop of BIRMINGHAM in a recent letter to the *Times* describes with accuracy and restraint the nature of the complaint and goes on to put his finger upon its cause. Reasonable obedience to authority and regard for the demands of the social necessities of the community are, he says, almost dead in the vast mass of the youth of the land, as a natural and inevitable consequence of the fact that the growing girl and boy receive little assistance in any direction towards a training in citizenship. This has been the prime failure in the national education of the present time, and the result is just as inevitable as the exposure to measles of a community which has had no training in protection against it. Dr. WAKEFIELD considers —and all thoughtful people will agree with him—that an effective training in citizenship is an essential part of elementary education. But it is no use now relying upon a future educational system which will come too late to be effective for the upgrowing generation, even if it accomplishes something useful later on. He therefore suggests a combination of existing organisations dealing with young people for the purpose of conference and combined action. The response already made to his letter shows that some at all events of these organisations are keenly alive to the need of action, which is indeed imperative for the satisfactory solution of the myriads of after-war problems.

THE Harveian Oration of the Royal College of Physicians of London will be delivered at the College by Dr. Robert Saundby, at 4 o'clock, on Thursday, Oct. 18th.

LITERARY INTELLIGENCE. — Lord Rhondda will contribute an introduction to the new edition of Sir William Crookes's book on "The Wheat Problem," which Messrs. Longmans will shortly publish. An additional chapter on Future Wheat Supplies has been contributed to the book by Sir R. Henry Rew, K.C.B.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.—At a meeting held in London on July 31st last it was decided to hold a general meeting of the medical profession in October in order to nominate a representative general committee and to discuss the best methods of promoting this appeal. This meeting has now been arranged for Wednesday, Oct. 10th, at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W., at 5 P.M. It is hoped that the meeting will be largely attended in order that the appeal may be well supported and made widely known to the medical profession and the public. Lieutenant-Colonel Sir Alfred Pearce Gould, K.C.V.O., will preside.

Annotations.

"Ne quid nimis."

INSINCERITY IN CASES OF WAR INJURY.

A RECENT number of the *Paris Médical* contains an essay on insincerity as a feature of certain cases among the wounded which, though its conclusions are admittedly tentative, forms an interesting attempt to clear the air and facilitate further investigation. The authors, M. Laignel-Lavastine and M. Paul Courbon, are in charge of the centre, under the military government of Paris, for the examination of soldiers who, in the absence of evidence of organic disease, are suspected of "ill-will." They divide functional states into two groups: in the first the patient is unaware that he is the originator of the troubles of which he complains, and is therefore sincere in making himself out to be ill; here are placed those psychoses characterised by impairment of the critical faculties, notably hysteria. In the second group the abnormal functional manifestations are directly dependent on the conscious "mauvaise volonté" of the patient; to be consciously aware of being the cause of his own complaint is the mark of the simulator. In the latter case the physician, recognising the illegitimate nature of the symptoms complained of, may distinguish three categories: (1) somatic disturbances, comprising mutilation and "pathomimia," or the artificial concoction of a diseased condition; (2) functional disturbances or simulation properly so-called; (3) functional disturbances grafted on a genuine organic affection, including exaggeration and perseveration. The diagnosis of malingering is really a psychological problem; in other words, the question is whether the patient has or has not the intention of deceiving. Now to detect an individual's intention is notoriously difficult; it is perhaps more prudent, therefore, merely to say, in a particular case, that there is no reason why the symptoms should not disappear. But this attitude is obviously unsatisfactory when dealing with such cases as M. Laignel-Lavastine and M. Courbon have under their care; their task is to search the reins and the hearts and to face the risk of making mistakes. If to ourselves our inner man is the sport of involuntary or unconscious deceits which render an exact determination of our motives all but impossible, how can we hope to settle analogous questions in others? The answer is that precisely this intimate deception does not impose or has less power of imposing on the outside observer. Experience shows there are constitutional peculiarities in different individuals which determine the variations in their intention to deceive. There is the pure simulator or malingerer, without apparent excuse, who does not wish to risk his life or to undergo the fatigues of warfare. Among the numerous types who advance some excuse may be distinguished the emotional simulator, who thinks he could never bear the sights of the battle-field; the hypochondriac, who thinks his physique would not stand campaigning; the man who pretends he would be more useful in less-exposed positions, or declares he has already "done his bit," or excuses himself by instancing the good fortune of some comrade. Often, too, the patient begins to malinger at the instigation of his family or continues to do so to prove to the physician he has

been wrongly accused of simulating. It must be admitted that occasionally therapeutic maladroitness suggests to the patient the idea of perpetuating his troubles, of the nature of which he was at first unaware. Exaggeration is very frequently observed; perhaps the commonest is that where the exaggeration is scarcely conscious. That symptoms may vary with the attention paid to them is not necessarily an indication of conscious deceit. The authors discuss with some minuteness the forms that simulation actually takes once the idea has occupied the patient's mind. They describe the active malingerer, who usually defeats his own purpose by challenging the observer's diagnostic power; the apathetic, who with oriental fatalism makes no reaction against the idea that he is ill, and who perseveres till the physician is exhausted; the sensitive, who eagerly falls in with the suggestions of the doctor and agrees readily enough that there is nothing the matter, yet persistently fails to throw off the influence of some trifling emotional factor. With this sensitiveness is associated a sort of mental dilettantism, which is especially noticeable in those who have already been at the front, arriving home again it may be for some genuine though temporary condition. The authors give a picturesque, yet none the less accurate, account of the devices to which the simulator has resort, and of the assumed attitudes of injured innocence, or of suspicious politeness, or of spurious anxiety to help in the unravelling of their case.

A COLOUR WARD.

Mr. H. Kemp Prosser holds the opinion that the colour of the surroundings has an enormous effect on the recovery of the sick, especially those who are depressed for one reason or another or are suffering from shell shock. An opportunity has been afforded him for carrying out his ideas by Miss McCaul, who has placed at his disposal a small ward in the McCaul Hospital in Welbeck-street. This ward he has had decorated according to his theories and the result is certainly very pleasing. He claims that it is of the first importance to remove from the patient the idea of being shut in, an idea which is truly often a cause of great worry to some sufferers. Therefore he paints the ceiling a bluish colour, so as to resemble so far as possible the blue of the sky, and the tint he employs he calls "firmament blue." This blue is also used for a wide frieze. The walls are painted a greenish yellow to represent the colour of foliage in spring, and the tint is called "Sunlight Primrose." A narrow slip of darker green separates the blue of the frieze from the walls. The floor is painted with a yellowish green, containing certainly more green than the walls. The window curtains are double, the inner curtains are mauve, and the outer curtains are pale yellow. The furniture is tinted yellow, and the bedspreads are a warmer yellow. The object of having the furniture of the same colour as the walls is that it may not be obtrusive, but, as it were, fade into the walls. The fireplace is painted the colour of silver, and even the tea-sets are chosen of a pale yellowish tint. There is no pattern anywhere in the room, except that the upper edge of the bedspreads has a simple design, and over the fireplace a small painting hangs, representing a scene near Maidstone in early spring. Mr. Prosser maintains that it is essential that no browns or reds should be used, for these colours are saddening. There is no doubt that this ward has a very cheerful effect, and we can well believe that the eyes of a man greatly depressed from shell shock or from some other cause would find in such a room as this no little relief from his depression, and this merely from the general aspect of the room. Mr. Prosser has devoted much trouble to carrying out his ideas, and though we do not endorse them fully, we feel that there is something to be said in their favour: anyhow we agree that the colouring of wards for the sick and wounded has been too little considered in the design of many hospitals. The work of Mr. Prosser will not have been in vain if it leads to more care being devoted to this aspect of hospital furnishing.

PRIMARY TUBERCULOSIS OF THE TONSIL.

IN an investigation made by Dr. A. Philp Mitchell for the Medical Research Committee, and published in the *Journal of Pathology and Bacteriology* (vol. xxi.), the author concludes that tuberculosis of the upper deep cervical glands develops from a primary focus in the faucial tonsils much more often than commonly supposed. Primary tuberculosis of the tonsil cannot be recognised by the naked eye, but requires the aid of the microscope or of inoculation experiments. Lesions tend to appear in certain sites, commonly just subjacent to the surface epithelium near the mouth of the lacunæ, less often in relation to the deeper portions of crypts, or deep in the tonsil close to the capsule. 100 cases of cervical adenitis in children and 6 in adults were examined, and in 41 of them tuberculous lesions were demonstrated in the tonsil. With regard to the type of infection, the results indicate that in Scotland, at any rate, tonsillar tuberculosis is bovine in origin. In a small percentage of children Dr. Mitchell found both bovine and human types in the tonsillar crypts without demonstrable lesions either in the tonsils or elsewhere. He concludes that, on the curative side, tonsillectomy is essential in all cases of tuberculous cervical adenitis in children, and, on the preventive side, that the only immediate safeguard is the sterilisation of all cows' milk supplied to infants and children. The article contains a careful survey of previous work on the same subject, with an adequate bibliography. The author has succeeded in throwing fresh light on a very important problem.

THE SURGERY OF THE NOSE FROM AN ÆSTHETIC POINT OF VIEW.

THERE are few things of less real importance in itself than an ill-shaped nose; yet though such a nose serves olfactory purposes, if it be of a very unusual shape it may cause its possessor real anguish. All owners of an eccentric proboscis have not the qualities of Cyrano. When the sufferer seeks the aid of his own medical adviser he is usually told not to worry about a matter which is not of the least importance, and if the patient has the right temperament sounder advice cannot be given. But in other cases, where there is something definite that might be done, and where the patient's mental distress is very real, we think his complaint should be met in a different spirit. In a recent issue of THE LANCET we printed a paper by Dr. Julien Bourguet, of Toulouse, in which he described briefly the methods which he employs to remedy certain nasal

deformities, and he gives illustrations of some of the patients on whom he has operated, showing the original conditions and those left after operation. He thus proves how much may indeed be done by care and skill in many cases. Most of the results have been very good, for one important point in the method employed by Dr. Bourguet is that all the operative procedure is done from within the nose, the incisions being made through the mucous membrane, so that there is no external incision and no external scar. It is hardly necessary to say that in this country also there are surgeons who practise these cosmetic operations with success, and the numerous cases of nasal deformity which may be found among the wounded in the war offer a fine field for much good work, which should not be invariably closed by the suggestion to the patient that he had better put up with a trouble which does not affect his general health. Of course, a more difficult problem faces the surgeon who has to deal with cases where the nose is completely destroyed than where he has only to remedy an ugly shape. Here there can be no question of a slight operation; any operation that is done must be extensive and thorough, if the result is to be anything more than a travesty of a nose. The result cannot be called satisfactory unless it satisfies the patient, for the operation is only undertaken for the purpose of giving the sufferer relief from the annoyance of being without a nose. Since the days of Tagliacozzi the operation of rhinoplasty has had many exponents, and in favourable cases the results have been excellent, satisfying even the most exigeant of patients, while the operation devised and first practised in India may give results leaving little to be desired. There are, however, many cases of destroyed nose where the conditions of the tissue in the vicinity render thorough operation impossible. Some time ago[1] we published an illustrated account of nasal prosthetic feats. Lieutenant Derwent Wood, A.R.A., there showed, with the aid of some striking illustrations, the marvellous improvement which may be effected in the appearance of patients by the aid of masks of greater or less extent, according to the individual cases. Mr. Wood's knowledge as a sculptor enables him to imitate as perfectly as possible the former condition of the face, so that the patient may look as he looked before. The war has provided no small number of cases for the exercise of skill in these cases, and in many cases a marvellous alteration for the better can be accomplished.

IRITIS AND OPTIC NEURITIS FROM TONSILLITIS.

THAT tonsillitis may be the starting-point of many forms of systemic infection and of inflammation in other organs, such as endocarditis, pneumonia, meningitis, and nephritis, has been recognised in recent years. Though the relation between iritis and other forms of ocular inflammation and septic foci in other parts has been emphasised in the same period, the importance of the tonsil as a source of infection is not sufficiently recognised. In the *Boston Medical and Surgical Journal* Dr. I. Sobotky has reported a case of iritis and optic neuritis following tonsillitis in which tonsillectomy was curative, thus confirming the connexion. A woman, aged 21 years, convalescing from acute follicular tonsillitis, was seen on Oct. 19th, 1915. She showed enlarged and tender cervical glands and extreme congestion around the right cornea. She gave a history of attacks of tonsillitis, usually at yearly intervals and followed after a week by inflammation of the eyes. In the present attack the right eye was very painful and sensitive to light. She was sent to the Massachusetts Eye and Ear Infirmary, where the following record was made: "Oct. 20th: Iritis of right eye. Optic neuritis of both eyes. Pupil well dilated and regular. Upper lid slightly swollen. No evidence of syphilis. Oct. 25th: Less pain in right eye. Left eye, slight ciliary congestion. Oct. 29th: Nasal examination shows rhinitis and diseased tonsils. X ray report: Teeth and accessory sinuses negative." Dr. Quackenboos agreed with Dr. Sobotky that the tonsils should be removed. On Nov. 4th this was done. They showed chronic inflammation and the crypts were filled with caseous material. The Wassermann reaction was negative. On Dec. 14th both optic discs were swollen to at least two diopters with some dilatation of the vessels. On Jan. 11th, 1916, the swelling had diminished. On March 1st, but for slight blurring, the discs were normal. On Jan. 25th, 1917, the patient resumed work as a stenographer and has remained quite well since that date.

[1] THE LANCET, June 23rd, 1917.

NOTIFIED VENEREAL DISEASE IN CHRISTIAN

IN his annual report for 1916 on venereal disease, reprinted from *Tidsskrift for den Norske Laegeforening*, P. Schou, medical officer of health of Christiania, gives an account of the system of notification adopted in that city. Though the report contains much interesting statistical information, it omits many details which, to readers unacquainted with legislation on venereal disease in Norway, would have given a more comprehensive survey of the subject. 3240 new casse of venereal disease were notified, of which 1930 were gonorrhœa, 405 soft sore, 860 acquired syphilis, and 45 congenital syphilis. Of cases of extragenital infection there were 12 of primary syphilis of the lip, 8 of the tonsils, 1 of the abdomen, and 1 of the second finger of the right hand. In 70 cases the notifications contained information which led to investigation of the source of infection, and of these the search resulted in disclosure of the sources of infection in 43 cases. According to information received the medical officer of health and the assistant woman doctor examined 21 men and 25 women, of whom 1 man and 1 woman were "found" by the police. Five men and 4 women, instead of attending on the medical officer of health, let themselves be examined by other doctors and produced certificates; of these patients 3 men and 4 women proved to be infected. None refused to be examined. Of the notified patients, 140 men and 1 woman declared they had been infected outside the town, and of these a large proportion were sailors whose infection had occurred in foreign ports. The number of those infected outside the town was evidently greater; but some doctors did not specify the place of infection on notification. With the best of intentions the notifying doctors must probably often have found it impossible to provide this information. As regards marital infection, 22 women and 14 men notified their consorts as the source of infection. On account of intimate association with patients suffering from venereal disease (relations, adopted children, &c.) 6 men and 7 women were examined, with the result

that 1 woman was found suffering from syphilis and 1 from gonorrhœa. The report does not, however, state how the disease was contracted in these two cases. Further, 460 men and 138 women were examined by the medical officer of health and the assistant woman doctor after having voluntarily reported themselves to the medical officer of health in order to receive treatment or to be sent to hospital. Of the total number of patients examined, 28 men and 60 women were admitted to hospital. The Board of Health defrayed the expenses of special treatment for 209 men, of whom 69 suffered from syphilis. The woman doctor treated 49 women and 2 children at the Board of Health. Of these, 32 women and the 2 children suffered from syphilis. Certain cases of venereal disease which were given ambulatory treatment by the Board of Health were also given free medicine; this raised the cost during the year to kroner 3862, as compared with kroner 2782 in 1915. One notification dealt with a case of infection with syphilis after treatment with salvarsan. The medical officer of health approached the police 22 times with a view to securing their help for revealing sources of infection. One woman was admitted to hospital by the help of the police. The police notified 19 women and secured one conviction of offence against the law that any person who knows that he or she suffers from venereal disease and yet indulges in sexual intercourse or exposes another person to infection is liable to punishment up to three years' imprisonment. Dr. Schou does not state what penalty followed this isolated conviction, nor does he say why convictions were not secured in the other cases notified by the police. That they secured only one conviction out of 19 cases is, however, in itself an eloquent testimony to the difficulties encountered in legislative attempts to penalise the spread of venereal disease.

THE ORGANISM OF TYPHUS.

IN the third number of *The New East*, a monthly review of "thought and achievement in the Eastern and Western worlds," published in English and Japanese at Tokyo, appears a short summary by Professor Futaki and his colleagues of the present position of the search for the causal agent of typhus. Typhus was introduced into Japan from Russia in 1914, and the epidemic since occurring has afforded ample opportunity for etiological study. So far various competing agents have held the field: bacilli described by Ricketts and Wilder, intra-leucocytic bodies by Nicolle, both in 1910; a diplobacillus noted by Rabinowitsch and a diplococcus by Furth in 1912; other intra-corpuscular bodies seen by Prowazek, and recently cocci again by Plotz and his co-workers. After carefully examining these rival claims Futaki reported to the Japanese Congress of Internal Medicine in April, 1916, his inability to confirm any of them from his own observation, adding his conclusion that the virus was either a free, non-visible corpuscle or a minute spirochæte. After finishing an investigation into rat-bite fever with the isolation of a spirochæte the Japanese observers have now done the same for typhus. In April of this year a spirochæte was found in the lumen of a kidney tubule in a patient dead of typhus, and similar organisms in the next seven cases examined except one at a very late stage of the disease. Later spirochætes were found in the urine of patients in an early stage, and injections of blood from one such made into a *rhesus* monkey gave rise after nine days' incubation to an illness in which similar spirochætes were found in kidneys and urine. The organism is described as resembling in form the *S. pallida*, 6-8 μ in length, with 5-7 windings, and a short cilium at each extremity. It stains with silver and Giemsa. Dr. Futaki and his colleagues at the Imperial Institute for Infectious Diseases, Tokyo, believe the organism they describe to be the causal agent of typhus, and propose for it the name of *S. exanthematotyphi*. The name is correct but cumbrous in Western characters, and if the Japanese organism, as seems probable, retains its place, we might prefer to call it *S. japonica*.

ANNUAL REPORT OF THE CHIEF VETERINARY OFFICER FOR THE YEAR 1916.

THE report for 1916 of the Chief Veterinary Officer of the Board of Agriculture and Fisheries (published by H.M. Stationery Office) shows that the problem of combating the diseases of animals at home must not be neglected, even though the thoughts of everybody are concentrated on war and war areas. England, from its insular position, is especially fortunate in regard to its ability to prevent the entry of suspect animals from abroad, as it is enabled to enforce quarantine precautions; and for this reason there are some maladies which continental veterinary authorities are called in to deal with which do not exist with us. However, some of these contagious diseases still gain an entrance, and this in a manner at present not satisfactorily explained, but the necessity of careful attention to home matters as well as those outside the island of Great Britain itself is thus demonstrated. Foot-and-mouth disease of cattle is an instance of this, an outbreak of which occurred on Feb. 10th at a place as far away from a port of cattle debarkation as Shepton Mallet in Somerset. By the skill of the veterinary inspector it was diagnosed and reported, and the Board of Agriculture confirmed and dealt satisfactorily with it. Careful inquiries, however, failed to detect the origin of the outbreak. In the report the other scheduled diseases are dealt with, particularly swine fever, swine erysipelas, tuberculosis, glanders, anthrax, and sheep scab. 4331 outbreaks of swine fever were confirmed, an increase of 337 on the previous year. Serum treatment was accepted by the owners in 83 per cent. of suitable cases, the results showing a benefit of 17 per cent. in favour of pigs on premises where such treatment was applied. Serum treatment being preventive and not curative, successful results depend largely on getting early in touch with outbreaks. Greater finality is hoped from treatment with sero-vaccine, which is still on its trial, since the mortality from the treatment itself has been considerable. About 9000 specimens were examined and reported upon in the Veterinary Laboratory—altogether a busy year's work when many of the staff are away on active service.

AN exhibition of war specimens, collected by members of the Royal Army Medical Corps and prepared by members of the museum staff of the Royal College of Surgeons, will be opened in the museum of the College, Lincoln's Inn-fields, W.C., on Thursday, Oct. 11th, at 3 P.M., by Sir Alfred Keogh, G.C.B., Director-General of the Army Medical Service. At the same time the Council of the College will present its honorary Fellowship to Sir Alfred Keogh.

THE CONTROL OF VENEREAL DISEASES.

National Council for Combating Venereal Diseases.[1]

THE question of the artificial prophylaxis of venereal disease has been discussed at a recent conference of the National Council and at two meetings of its Executive Committee. A special meeting of the Council is to be held on Monday, Oct. 15th, at 8.30. P.M., at 1, Wimpole-street, W., to consider the following resolution submitted by the Executive Committee :—

In view of the public attention now directed to the whole subject of prophylaxis, the Executive Committee, after careful consideration, is not prepared to depart from its original position, in which, in accordance with the spirit of the Royal Commission's Report, it refrained from recommending the adoption of prophylaxis—i.e., the provision of outfits to men before sexual indulgence. The committee strongly urge the importance of the making of arrangements for the early treatment of venereal disease even before the outset of symptoms.

An informal discussion on the progress of the movement between members of the executive and other committees and the members of the National Council will take place at a reception to be held at the Grafton Galleries at 8.30 P.M. on Tuesday, Oct. 16th, when delegates from the various branches will be present.

Measures Taken in New South Wales.

Speaking at the recent annual general meeting of the Royal Prince Alfred Hospital at Sydney Sir Thomas A. Stuart, chairman of the board of directors, spoke of the work of the evening venereal clinics instituted in 1914 at the request of the State Government. Before the establishment of these clinics a large number of cases were not treated at all, or were treated by quacks. The Royal Prince Alfred Hospital was the only institution responding to the Government's appeal, with the result that patients came in crowds and overwhelmed the resources of the hospital. In 1915 more than 2000 cases were on the books during the year, while in 1916 the number was 2643. On one occasion it was necessary to call in the police to assist in maintaining order, and the board was reluctantly compelled to reduce the numbers admitted to the clinics. The hospital has 30 beds for women and children suffering from venereal diseases and has served as a model for the establishment of similar clinics in three other States and in New Zealand.

Sir Thomas Stuart referred to a report made to him by the medical superintendent of the hospital, who had just returned from Egypt, where he had been instrumental in carrying through certain preventive measures. A prophylactic or preventive tent was established at the entrance of each camp for men returning to their quarters after having exposed themselves to infection. Of a certain series of 2000 cases only three developed disease, while in another series in the first month after the system had been established, of 432 men who were attended to in the tent not one became infected, while of 35 men who developed the disease not one had visited the tent. Acting on this report the Commonwealth Defence Department has established similar arrangements at each military camp in the several States.

Enlightenment Campaign in Victoria.

The Public Health Department of the State of Victoria has issued a 16-page pamphlet dealing in popular manner with venereal diseases: (1) the causes, symptoms, and results of venereal diseases; (2) the provisions of the Venereal Diseases Act; (3) directions to parents and guardians regarding children suffering from venereal disease; and (4) the provisions relating to advertisements.

The provisions of the Venereal Diseases Act, 1916, may be briefly summarised as follows: 1. Any person suffering from a venereal disease shall forthwith, on becoming aware of his condition, consult a medical practitioner, either privately or at a hospital or clinic, and shall also supply his correct name and address. Failure to do so renders him reliable to a penalty of £20. It is illegal for any person other than a medical practitioner to treat venereal disease. Chemists are not allowed by law to treat any person suffering from venereal disease. 2. Every patient who is under medical treatment shall continue under treatment until he has received a certificate of cure. 3. A patient may change his medical attendant, but if he does so, must inform his new adviser of the name and address of his last adviser. 4. A person suffering from venereal disease, and not being treated by a medical practitioner, may be apprehended, after due warning, and detained until cured. 5. No one shall knowingly infect any other person with a venereal disease, or knowingly do or permit or suffer any act likely to lead to the infection of any other person with such a disease. Penalty, £100 or 12 months' imprisonment, or both. 6. No one suffering from venereal disease shall prepare or handle food intended for consumption. 7. Anyone suffering from venereal disease shall take all reasonable precautions to prevent spread of infection, and shall carry out the directions and instructions of the medical attendant.

The provisions relating to advertisement prohibit under penalty of fine or imprisonment anything in the nature of a public advertisement relating to venereal diseases, nervous debility, or to the treatment of complaints peculiar to women. The offender is liable to summary arrest. Any person printing or distributing such advertisement is also liable to severe penalty. And any newspaper or any printed or written matter is prohibited from entering Victoria if it contains reference in the nature of an advertisement to the conditions mentioned. A protective clause runs as follows: "No offence, however, will be committed by any person who prints, publishes, distributes, delivers, or posts any *bonâ-fide* medical or pharmaceutical book, pamphlet, magazine, or periodical, or any work of recognised literary merit relating to the conditions referred to."

Bombay League for Combating Venereal Diseases.

The Bombay Sanitary Association, which was founded in 1902 with a view of coöperating with the Health Department in educating the public on matters of hygiene and sanitation, held a conference on March 6th and 20th, 1917, to discuss the incidence and control of venereal diseases in Bombay, at which the following resolutions were passed :—

1. That in view of the great prevalence of venereal diseases in Bombay and of their grave consequences, this conference of medical men assembled is of opinion that the time has come when the public and the State should be roused to the gravity of the situation, and induced to take measures to prevent them.
2. That a league for combating venereal diseases, and consisting of medical and lay men, be formed to educate public opinion and to devise and assist in carrying out all such measures as are calculated to prevent the spread of these diseases.

A provisional committee was appointed to take the necessary steps for the formation of the League, with the Hon. Mr. G. S. Curtis, C.S.I., I.C.S., as president, Surgeon-General R. W. S. Lyons, M.D., I.M.S., and Sir Fazulbhoy Currimbhoy as vice-presidents, and Dr. John A. Turner, C.I.E., and Dr. Lemuel L. Joshi as joint honorary secretaries. At a later meeting of this committee the aims and objects of the League were defined as follows: (1) To provide accurate and enlightened information as to the prevalence of these diseases, and as to the necessity for early treatment; (2) to promote the provision of greater facilities for their treatment; (3) to increase the opportunities of medical students and practitioners for the study of these diseases; (4) to encourage and assist the dissemination of a sound knowledge of the physiological laws of life in order to raise the standard both of health and conduct; (5) to coöperate with existing associations, to seek their approval and support, and to give advice when desired; (6) to arrange, in connexion with such organisations, for courses of lectures, and to supervise the preparation of suitable literature; (7) to promote such legislative, social, and administrative reforms as are relevant to the foregoing aims and objects.

Dr. J. A. Turner read a paper at the conference summarising the work being done in England and suggesting measures of control in Bombay. The scheme he outlined involved an initial outlay on dispensary and clinic of R.5000 with an annual cost of R.20,000 for maintenance. Dr. A. Powell described the course of syphilis among the Indian community, summarising the distinctive characters as follows: Syphilis does not by any means run exactly the same course in Indians as it does in Europeans. Hence European practitioners fresh from European schools look out for—and miss—the signs common in Europe. They find but do not correctly interpret those common in the indigenous people of this country. 1. Sore throats are much less common in India. 2. Rashes are less common. In a country where prickly heat and ringworm abound, rashes are easily overlooked, especially by the patient. 3.

[1] The address of the National Council is now Avenue Chambers, Southampton-row, London, W.C. 1. Tel.: Museum 2432.

Tabes and G.P.I. are infinitely less common in India. 4. Obscure "rheumatic"-pains in the joints, bones, and muscles are infinitely more common, more severe, and more persistent in Indians; in fact, they are often almost the only secondary and tertiary symptoms. Genuine "acute rheumatism," "rheumatic fever" with its cardiac complications, is very rare among Indians. 5. Disease of the arteries is much more common in India. It is especially common in the ascending arch of the aorta and in the coronary arteries. 6. Disease of the aortic valves is more common than disease of the mitral valves in India.

REPORT FOR 1916 OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON.[1]

Dr. W. H. Hamer's fifth annual report in each of these capacities has just been issued. Not farther back than last November his report for the preceding year was noticed in these columns.[2] The appearance of the present volume after this brief interval indicates commendable promptitude. Readers of the last two reports will miss the instructive series of diagrams which illustrate the volume for 1914. That their actual publication has been discontinued since that year is due to economic considerations. But from the present context it is evident that their compilation is still in progress, and we may therefore hope that on the return of peace conditions this impressive method of graphic representation will be resumed in the published reports.

PART I.—PUBLIC HEALTH.

The health of London in 1916 compares favourably with that of the preceding year. The medical officer warns us, however, that the estimates of population available are still less trustworthy than were those of 1915, a fact that must be remembered in comparing the statistics of successive years. When the National Register was compiled two years ago the marked local changes caused by war were only then beginning. Consequently that register, which had never been quite reliable, could not be regarded as even approximately forecasting the subsequent movements of population. The weather conditions of last year were phenomenal, and doubtless accounted in some measure for the substantial saving of life among infants, as well as for the unusual freedom at other ages from the ravages of infectious diseases. In the year 1916 the flow of water under London Bridge was greater than in any previous year on record. The floods of the early part of 1915 had been the highest since 1894, and there followed in the year under review a flow of water in the Thames of 875 thousand million gallons. Apart from abnormal weather conditions, the study of sickness and death-rates is complicated by disturbances incidental to war.

Vital Statistics.

The marriages in London during 1916 were fewer by about one-third than those of the previous year, the decrease being greatest in the second half of the year. The abnormally high number of marriages during the progress of hostilities probably corresponds fairly with the movements of enlistment. Difficulties arise in calculating a marriage rate for comparison with pre-war figures, owing to the circumstance that the data include men on active service, while the published estimate of population relates to civilians only. The Registrar-General calculates a rate of 19 per 1000 for 1916. In the previous year it probably amounted to about 26. For analogous reasons the computation of a reliable birth-rate is beset with difficulty. The birth-rate of the year under notice is officially estimated at 21·5 per 1000, against 22·5 in 1915; these rates may be generally compared with the average in the quinquennium before the war—viz., 25 per 1000.

Effect of war conditions on mortality.—The Registrar-General calculates the death-rate of 1916 at 14·7 per 1000 of the civil population. The rate of 1914 had been 14·6, calculated on the total population in the middle of the year. Thus, with fewer deaths in 1916 the mortality is stated to have been higher. This, however, is an anomaly depending solely on the use of a civil population, without correction for changes among the living resulting from the withdrawal of males of military age—a period of relatively low mortality. In the absence of hostilities the death-rate of last year would have been below that of 1914, and probably would have barely exceeded 13·6, the low rate of 1912. At most ages the mortality in 1916 shows a decided improvement upon that of 1914. The decrease in the deaths under one year is partly due to the still falling birth-rate, but not more than 10 per cent. thereof can be thus accounted for. The rate of infant mortality last year was 89 per 1000 births, and was 2 per 1000 above the lowest rate hitherto experienced in London. The favourable condition of moderate summer temperature has doubtless contributed to this result, but it is probable that the recent restrictions on the sale of intoxicants has had a large share in reducing the deaths from suffocation, and perhaps also from prematurity. It is worthy of mention that the decline in mortality has not taken place among infants *pari passu* with the decline at the higher ages; on the contrary, it has only become conspicuous during the current century, and particularly within the last seven years.

Infectious diseases.—The behaviour of infectious sickness last year was essentially similar to that in 1915. London suffered no disaster from the spread of typhus fever, and in spite of the importation of a few cases of small-pox that disease never obtained a foothold. The civilian notified cases of scarlet fever numbered 8746, or about half the total reported in the preceding year, and about one-third the total in 1914. There were fewer attacks in 1916 than in any year since 1891, when notification first became compulsory. The cases of diphtheria notified among civilians numbered 8743, differing little from the totals in each of the two preceding years. Enteric or typhoid fever still continues to decline. The notified attacks in 1914 had numbered 789, and in the following year 607, whilst there were only 461 in the year under review. Among many possible sources of infection fish or shell-fish were inculpated in 85 instances. The year 1916 was the fifth in succession in which there was marked smoothing out of the autumnal rise in London. The experience of last year confirms that of 1915 respecting the complete failure of evidence of increased spread of infection by human agency. For, after making due allowance for the absence abroad of susceptible persons, the prevalence of typhoid in London in the last two years has been actually lower than ever before known, despite the addition to the community of an appreciable number of typhoid convalescents from abroad. On the other hand, recent phenomena tally well with the theory of food causation. It is noteworthy that, as the late Dr. H. T. Bulstrode asserted in his reports of 1896 and 1911, a steady improvement has been brought about in the last 20 years by the elimination of dangerous shell-fish. As regards further reduction of typhoid fever, there is reason to believe that more benefit is likely to result from pursuing the older epidemiological methods than from giving effect to the new principles advocated by Koch and his followers. In particular, further care for the purity of shell-fish layings and entire prohibition of the sale of ungutted flat fish are to be looked upon as the main lines upon which further advance can be made.

Phthisis.—The civilian deaths from phthisis in the year 1916 numbered 6491, as compared with 6875 in 1915 and 6476 in 1914. At military ages there was a decrease last year on the deaths registered in 1914. The calculation of a mortality rate for the civil population from the above figures would give a result in no respect comparable with pre-war rates; for not only has the war left on the civil population practically all the pronounced phthisis, but a portion of the fatal cases among persons accepted for service, and among those subsequently discharged for tuberculous disease, are recorded as civilian deaths.

Cerebro-spinal fever.—In the course of last year 425 cases of this disease were notified among the civil residents of London, or fewer by 202 than in 1915. These figures do not include posterior basal meningitis. The Registrar-General tells us that in London cases of the last-named disease are notifiable under the head of cerebro-spinal fever, whilst elsewhere there is no uniformity of classification. In view

[1] King and Son, Westminster, pp. 42. Price 1s.
[2] THE LANCET, Nov. 11th, 1916, p. 837, and Nov. 25th, 1916, p. 913.

of this and other difficulties computation of fatality rates has not been attempted, it being evident that records of death from cerebro-spinal fever for London bears no consistent relation either to the notified cases of that disease or to the actual number of deaths from this cause.

Poliomyelitis.—There was an increase last year in the attacks by this disease reported throughout the country generally. In London 197 cases of poliomyelitis were notified, the highest number previously reported having been 145 in the year 1913.

PART II.—EDUCATION.

A large share of the energy of the County Council's medical staff continues to be devoted to matters connected with education. Of the administrative difficulties encountered in the preceding year as the result of war conditions no abatement was experienced in 1916. Thanks to the special efforts made by the older men and by the women already employed as school doctors, the work of medical inspection has been prosecuted with considerable success. Moreover, the difficulty of securing the services of a sufficiency of qualified persons for the hospital treatment of school children has been satisfactorily met. The further difficulty of retaining an adequate supply of nurses has been overcome by the Council, who have adopted financial measures against the further depletion of the nursing staff, whose full efficiency is essential in this department of the public service. The work of "following up" has been rendered particularly onerous by reason of the serious defection of volunteers. To meet this emergency the care committees of several adjacent schools have coöperated with the view of economising the work of home visitation, and thus carrying out the duty of following up in urgent cases albeit with a reduced number of visitors.

Medical inspection and treatment.—Of the children primarily examined by the doctors last year in elementary schools 88,415, or nearly one-third, were found to require treatment for defects. Reinspections were made of the children who at the first examination had been found ailing, with the result that 41·7 per cent. had been brought under treatment within six months, as compared with 49·6 per cent. in 1914. Between the authorities of maternity centres and the school medical service satisfactory cöoperation has been established. In two instances the premises of the school treatment centres are also used by the maternity centre for the treatment of mothers and of children under school age. Similar cöoperative schemes are in prospect at four other centres. The open-air schools at Birley House and Shooter's Hill were kept open throughout the year. Kensall House school for tuberculous children has also been continued, and some of the playground classes have been held in the public parks. Altogether 5422 children were examined during the year with a view of admission to special schools, and of these rather more than half were certified as suitable for admission. The remainder were either returned to elementary schools or were declared unsuitable for any of the Council's institutions.

Personal hygiene.—There are now 24 cleansing stations in London, at 20 of which scabies is admitted for treatment; more than 3000 children suffering from scabies were given not fewer than 17,000 baths in the course of the year. Examination was made of 988,000 children, 25,000 of whom were found to be verminous. Of these, 13,000 were were cleansed by the authorities and 11,000 by the parents. Verminous children attending schools in outlying districts are now brought under the scheme, and are conveyed to the cleansing stations in ambulances. Moreover, in certain instances borough councils are now giving special facilities for hot baths to be obtained by school children and members of their families.

Nutrition and malnutrition.—At the present time children suffering from that degree of malnutrition which is known as "wasting" are rare in our schools. Conditions leading to emaciation are now detected at an early stage, the sufferers being promptly referred to appropriate agencies for relief. In the course of last year only 0·4 per cent. of the children inspected were placed in this class, against 0·51 in 1915. From figures relating to the last four years it appears that the general state of the children has been better during the war than in the period immediately preceding. The steady improvement of previous years in clothing and footgear, as well as in general cleanliness, has been fully maintained during 1916. This fact is presumably attributable in some measure to better economic conditions, but it is doubtless largely due to the maintenance of medical and cleansing work carried on for some years past in connexion with the schools. The continued improvement of the children which is revealed at the medical inspections testifies to the success of the arduous work of the school nurses. "These splendid results," writes Dr. Hamer, "which show that none of the horrors of war have been allowed to affect the general condition of the children, or to interfere with the growth of that solicitous care for their welfare which has distinguished recent years, are a matter for profound joy and satisfaction. They may well encourage us to face the future with complete confidence; for a community that can thus protect its children while putting forth the most prodigious martial efforts the world has ever seen, must be sound to the core." The dominant influence of social condition is manifest in the returns of the various parts of the metropolis. A map showing the nutritional state of the children would correspond generally to one showing their social condition. That this is so is abundantly evident from the report. In the year 1913 a special study was made of the health of children of school age. In a report respecting nearly 1000 of these children the close connexion of tuberculous disease with malnutrition was emphasised, tuberculosis being definitely recognised in 19 per cent. of the cases examined, and its presence being suspected in a large additional proportion.

Infectious diseases.—The year under review was remarkable for exceptional freedom from infectious disease among school children. In the case of scarlet fever the returns are particularly satisfactory. In certain weeks of August and December the scarlet fever notifications throughout the metropolis were fewer than 100, being only about one-third the average in the corresponding weeks of the previous four years. As causes producing this result the effect of altered nomenclature, of climatic influence, and of flea prevalence are here reviewed, and the important question of the relationship of scarlet fever is considered. As regards flea prevalence, we note that examination of the flea and scarlet fever curves in the last eight years reveals a striking correspondence in their annual variations. Among measures for limiting the spread of scarlet fever the importance of hospital isolation is taken for granted, and the fact is referred to that the low level reached by that disease in 1916 has fortunately liberated for other uses many additional beds in the hospitals of the Metropolitan Asylums Board. In respect of epidemic throat illness the record of the year under notice was unique, inasmuch as the notifications of diphtheria actually exceeded those of scarlet fever for the whole year, whilst from September onwards the excess was marked. The strange comment was made in some quarters that the position was a serious one, inasmuch as diphtheria was more widely prevalent in London than scarlet fever, the real explanation being, of course, that the figures for scarlet fever were so exceptionally low as to render those for diphtheria unsatisfactory by contrast. As long ago as the eighteenth century much confusion prevailed with reference to epidemic throat disease. It was not until 1831 that the term "diphtheria" was employed; up to 1855 the two diseases in question were classed together by the Registrar-General, and in German statistical returns the heading "Scharlach diphtherie" has continued in use till now. The discovery of the diphtheria bacillus by Klebs and Loeffler in 1883 and 1884 led to the adoption of bacteriological methods for confirmation of the diagnosis of diphtheria, and probably as a result there has been an increasing use of that term during the last 30 years. The relationship between dry years and one or both of these conditions has been exhaustively analysed by Dr. J. B. Longstaff and Sir Arthur Newsholme. Dr. Longstaff found the correspondence close in the "sixties" and early "seventies," but less marked in later years. Whilst Sir Arthur Newsholme, dealing with diphtheria alone, concludes that the essential factor in the production of epidemic, and still more of pandemic, diphtheria is the occurrence of a succession of years of deficient rainfall, associated as they must be with abnormally dry conditions of the soil and subsoil.

DONATIONS AND BEQUESTS.—The committee who are distributing the residuary estate of the late Mr. Leopold Salomons have allocated a further £50,000 to hospitals.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Importation of Malaria into France.

I HAVE several times mentioned the existing fear that subjects of malaria, who are returning to France in great numbers from the Salonika Forces, should prove sources whence malarial disease may develop in their native country. Against this apprehension it has always been urged that the intervention of particular kinds of anopheles is required, and that the culices and anopheles met with in France are inoffensive. For prudence sake, however, it has been recommended that hospitals reserved for the subjects of malaria should be placed in localities where there is not much stagnant water or many breeding places for gnats. Definite proof now comes that fears on the subject were not exaggerated and that the hæmatozoa of oriental malaria can be transmitted by our indigenous anopheles, which seem to be capable of this new and regrettable adaptation. M. Victor Raymond and M. Grysez proved the possible occurrence last spring of cases of malaria among soldiers coming direct from regions in France where the disease is unknown, but who had occupied trenches where the soldiers preceding them had returned from Salonika, having contracted malaria; the *terrain* was flooded and mosquitoes abounded there, among them several kinds of anopheles. A confirmation of the possibility of outbursts of malaria, derived from the East, and one having great weight, has now been furnished by M. Laveran, who has presented to the Académie des Sciences a research carried out at the Pasteur Institute by M. Rouband. M. Rouband has submitted to bites from indigenous anopheles malarious subjects who have returned from Salonika with the disease upon them. He has found in the proboscis of these anopheles living hæmatozoa, and having submitted himself to bites succeeded in contracting malaria of a characteristic form, with periodic febrile accessions and the presence of hæmatozoa in his blood. M. Laveran concludes from this that it is necessary to keep the victims of malaria away from regions where the mosquito abounds, and to instal on elevated plateaux, where the nights are cold, hospitals reserved for them, the beds being furnished with nets. Otherwise there is, he says, a risk that after the war malaria may invade France and render it, or at any rate our warmer regions, as unhealthy as the oriental plains.

Breastplates for Soldiers.

Inspector-General Delorme has called the attention of the Académie de Médecine to the frequency and immediate gravity of penetrating wounds of the thorax and abdomen. These represent an enormous proportion of deaths on the field of battle, while the adoption of steel helmets has considerably diminished the total of grave wounds of the skull. Wounds of the heart, big vessels, lungs, and abdominal viscera account for the chief part of the mortality among those of the wounded who die before there is time to render them proper care. These wounds in a trench war are due, not for the most part to rifles or machine guns, against which there is no possible protection, but to the bursting of explosive projectiles, hand grenades or shrapnel, all of which inflict wounds with a relatively feeble initial velocity, so that a method of protection, which would be powerless against bullets, would meet the case. In view of the excellent results given in head wounds against the same sort of projectiles by the steel helmet now used by all the soldiers, M. Delorme proposes that the troops should be provided with a breast-plate of the same metal and thickness, suspended round the neck and covering entirely the front of the trunk from the root of the neck to the pubis, the weight not being greater than that of the helmet; this breast-plate could be placed over the back when kneeling in the trenches or when lying flat on the stomach. The Académie de Médecine has unanimously decided to invite the Minister of War to submit the idea to practical experiment.

The Disappearance of Small-pox from Paris.

At the last meeting of the Seine Board of Health Dr. Roux, of the Pasteur Institute, reported on the results of small-pox vaccination in Paris during 1916. The 800,000 vaccinations performed in Paris at the outbreak of the war and during the year 1915 resulted in the disappearance of small-pox from the city, and in spite of the fluctuation in population due to mobilisation, and of the fact that Paris had given shelter to a number of refugees from the invaded districts, the capital remained immune from small-pox. This had occurred although all the conditions favourable to the breeding of the disease were notably present, among immigrants both morally and physically reduced, of whom the greater number had not been revaccinated and some not vaccinated at all. Small-pox infection was repeatedly introduced from outside sources without spreading in the city. Dr. Roux considers that a prolonged war without small-pox is a remarkable fact, proving the efficacy of the prophylactic measures taken. The honour of the achievement is due to the vaccination service as well as to the public, which has eagerly responded to the appeals addressed to it by the Government in placards and newspaper advertisements. During the year 1916 only a single case of small-pox was notified in Paris, and one case was imported from Algiers. The latter was an Arab who had not been vaccinated in infancy, and who arrived in Paris during the period of incubation; he was admitted to the hospital Claude-Bernard, where he died. This Arab worked in a factory where 1000 men were employed, living with his brother. The workmen and the brother were vaccinated on the day the disease was recognised and not one of them contracted it.

Antirabic Inoculation at the Pasteur Institute in 1916.

During the year 1916 1391 persons underwent preventive inoculation at the Pasteur Institute in Paris; six died of hydrophobia, giving a gross percentage of 0·43. But two of the patients developed the disease while still under treatment, and one died less than a fortnight after its conclusion. Deducting these three, the revised statistics stand: Persons treated, 1388; deaths from hydrophobia, 3; mortality, 0·21 per cent.

Improved War Bread.

The war bread used in France, made from 85 per cent. flour, has given rise to much complaint. The grey-black colour and unpleasant taste have disgusted a number of consumers, with the result that a large amount has been wasted, and the question has arisen whether economy would not be better served by providing bread made with normal flour and limiting its consumption by a special bread-card. It is not disputed that the present bread keeps badly and quickly undergoes acid fermentation, leading to gastric and intestinal disorders in persons predisposed to dyspepsia. The researches undertaken by MM. Lapicque and Legendre at the Ministry of Inventions have now made it possible to grind the flour to the 85 per cent. standard and still avoid the greater part of the objectionable qualities. They have shown that the constituent of war flour eliminated from 70 per cent. (white), known by millers as *recoupettes*, is the part which deteriorates by fermentation and gives rise to acid products. By alkalising the flour when it is mixed this injurious fermentation is held in check. M. Lapicque bases his conclusions on a simple experiment which can be readily confirmed. A piece of slaked lime wrapped in a piece of cloth and held by a string is placed in the bowl from which the baker takes his water for making the dough. The quantity of lime which dissolves under these conditions is 1 : 1000, and exactly the proportion required for checking fermentation; it is therefore only necessary to see that the lime is renewed when exhausted. The manufacture involves practically no extra trouble to the baker, while the increase in cost is trifling, less than 5 cts. for 3000 kilos., 1 gramme of lime being sufficient for 3 kilos. of bread. The quantity of hydrated lime introduced into the daily diet of the consumer does not exceed 10–20 centigrammes, of which the greater part becomes carbonate during the leavening. This amount is harmless, being indeed not greater than that contained in a glass of milk. The new war-bread is much superior to the old; the dough is well risen, whiter, and not viscous; the smell is pleasant and not acid; the crust is excellent. The bread keeps well and its digestion does not lead to any disorder. The public has been quick to appreciate these advantages, and bakers who have begun to make the bread according to official instructions based on a communication by Dr. Lapicque to the Academies of Medicine and Sciences have soon been obliged to increase their bakings. It is a curious fact that even animals have noticed the difference between this bread and the other, and having once tasted the new refuse the old.

Joy-riding for Whooping-cough.

It has long been known that convalescence after whooping-cough is accelerated by change of air, by movement from one locality to another, whether from town to country, or from one part to another of the same country. From these observations Dr. Challamel claims to have deduced an original therapeutic method. He assumes that intense oxygenation of the lung is the cause of improvement, and therefore utilises the effects of motor driving in the fresh air. Under the influence of rapid transit through the air intrapulmonary pressure is probably augmented, with increased ventilation of the air cells. The effect is, in fact, the same as in the compressed-air chamber, but the joy-ride affords a practical method within the reach of all. The author has brought to the notice of the Therapeutical Society several cures effected by this treatment, which he has begun to practise at early stages of the disease, as soon as the temperature has fallen. A beginning is made with a ride of ½–1 hour at a slow speed, in an open motor, the child's face being protected from dust; little by little the length and speed of the ride are increased. The treatment can be carried out in all kinds of weather except actual rain; the presence of bright sunlight is not essential. Cures have resulted after two rides, and as a rule a few prove sufficient. The only contra-indications are fever and extreme youth. The treatment should not be employed for children under the age of three months.

Obituary.

DAVID CHARLES REES, M.R.C.S. ENG., L.R.C.P. LOND.

Mr. D. C. Rees, whose death from typhus fever in Port Elizabeth, South Africa, was recently announced in the *Medical Journal of South Africa*, was educated at Charing Cross Hospital Medical School, and after obtaining the Diploma of the Conjoint Board went out to Nigeria with General Lugard's Frontier Force. He went up the Niger, saw service there, and gained considerable experience in the diseases of the country. On his return the London School of Tropical Medicine was just being opened, and Sir Patrick Manson immediately secured his services as the superintendent, or, as it was then called, medical tutor of the school. The first session opened on Oct. 1st, 1899, and Mr. Rees was responsible for organising the lectures and other details of the course. So well did he do this that the general scheme adopted by him has held till the present day. He was himself an able teacher, and had a happy knack of interesting the early students in the laboratory work, most of which was usually quite new to them. In the summer of 1901, during the vacation, he visited the experimental house, set up by the School in the Roman Campagna for malarial experiments, and he stayed there for several days with Dr. L. Sambon and Dr. G. C. Low, the experimenters. He then returned to the school for the fourth session, and worked in London till the end of the year, finally, to the sorrow of all his fellow teachers, giving up his appointment to take up the very important one of district surgeon and port health officer at Port Elizabeth. Here the opportunity of combating plague and small-pox presented itself, and, ably dealing with these, Mr. Rees made a name for himself in this line; that he should have died from typhus, the disease he was trying to stamp out at the moment, is very sad. After taking up his residence in South Africa he did not have the time or opportunity to come much to London, but he visited the capital on the occasion of his marriage and again three or four years ago, when he renewed his old associations with the School of Tropical Medicine.

There is little doubt, if Mr. Rees had stuck to tropical medicine, that he would have become famous in that section of medicine. Befcre leaving for Africa he wrote on tropical subjects to the journals, and these contributions were always well written and carefully thought out; but work in Port Elizabeth did not allow him to keep up his literary activity. At the time of his death Mr. Rees was in his fiftieth year, and he has left a widow and two children to mourn their loss. To them we offer sincere sympathy, and the London School of Tropical Medicine and all its teachers who knew and were associated with the deceased will offer them the same.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. B. A. Bull, R.A.M.C., attached London Regiment, was educated at Oxford and at St. Bartholomew's Hospital, London, and qualified in 1915. Shortly afterwards he joined up.

Died of Wounds.

Capt. F. Hardie, R.A.M.C., qualified at Edinburgh in 1900, and was in practice at Southampton prior to joining up.

Died.

Lieut. D. Anderson, R.A.M.C.

Wounded.

Capt. A. C. Ransford, R.A.M.C.
Capt. R. G. Abercrombie, R.A.M.C.
Capt. G. A. Macfarlane, R.A.M.C.
Lieut. C. B. Simpson, R.A.M.C.
Capt. D. L. Tate, R.A.M.C.
Capt. F. G. Flood, R.A.M.C.
Capt. F. A. L'Estrange, R.A.M.C., attached Rifle Brigade.
Capt. M. McNiff, R.A.M.C., attached Durham Light Infantry.
Lieut. G. H. Adam, R.A.M.C., attached Lancs Fusiliers.
Capt. F. Black, R.A.M.C., attached Royal Engineers.
Lieut. C. O. Bodman, R.A.M.C.
Lieut.-Col. G. H. L. Hammerton, M.C., R.A.M.C.
Lieut. J. C. Pearce, R.A.M.C., attached Yorks Light Infantry.
Capt. D. O. Riddel, D.S.O., R.A.M.C., attached W. Yorks Regiment.
Capt. W. Turner, R.A.M.C.

Slightly Injured.

Surgeon A. E. Panter, R.N.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. J. B. Bailey, East Yorks Regiment, killed in action, only child of Dr. J. E. Bailey, of Beverley, Yorkshire.
Second Lieut. F. J. Chown, Royal Flying Corps, killed in action, only son of Dr. F. Chown, of Townshend, near Hayle, Cornwall.
Capt. R. A. Eakin, King's Shropshire Light Infantry, died of wounds, only son of Dr. J. W. Eakin, of South Mimms, Barnet, and late of Trinidad.
C. M. Richards, killed in action, only son of Dr. M. Richards, of Fremantle Western Australia.
Second Lieut. G. D. Rose, Gordon Highlanders, killed in action, second son of Dr. G. Rose, of Aberdeen.
Second Lieut. E. C. G. Hull, Royal Field Artillery, killed in action, elder son of Dr. E. G. Hull, of Streatham Common, London.
Flight Sub-Lieut. N. S. Wright, R.N., killed, son of Dr. W. S. Wright, of Wool, Dorset.

FOREIGN DECORATIONS.

French.

Croix de Guerre.—Major (temporary Lieut.-Col.) L. J. M. Deas, I.M.S.; Temp. Capt. A. L. George, R.A.M.C.

THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet announced. All are members of the R.A.M.C. unless otherwise stated. The dates in parentheses, in those cases where bars have been awarded, refer to the number of THE LANCET in which a record of the original decoration will be found:—

Bar to the Distinguished Service Order.—Maj. J. S. Y. Rogers, D.S.O. (Jan. 22nd, 1916, p. 215).

Distinguished Service Order.—Capt. (acting Lt.-Col.) J. D. Bowie; Temp. Capt. D. Lees; Temp. Capt. I. C. Maclean, M.C.; Maj. (temp. Lt.-Col.) E. C. Montgomery-Smith; Temp. Capt. H. A. Pallant, M.C.; Temp. Capt. J. B. Orr, M.C.; Capt. G. D. Watkins.

Bar to the Military Cross.—Capt. W. B. Allen, V.C., M.C. (Sept. 30th, 1916, p. 620); Temp. Lt. (temp. Capt.) L. G. Bourdillon, D.S.O., M.C. (Jan. 22nd, 1916, p. 215); Temp. Capt. R. I. Harris, M C. (Nov. 18th, 1916, p. 881); Capt. W. McFarlane, M.C. (Dec. 16th, 1916, p. 1034); Capt. H. R. Partridge, M.C. (Oct. 28th, 1916, p. 770); Capt. J. D. Proud, M.C., Spec. Res. (June 23rd, 1917, p. 969).

Military Cross.—Temp. Capt. G. M. Adam; Capt. C. D. S. Agassiz; Capt. A. C. Bateman, Spec. Res.; Temp. Capt. S. J. A. Beale; Capt. K.

Biggs, Spec. Res.; Temp. Capt. G. A. Bird; Capt. R. G. Blair, Spec. Res.; Capt. F. D. Blandy; Temp. Capt. C. A. Brisco; Temp. Capt. W. T. Brown; Temp. Capt. W. T. C. Pearce; Temp. Capt. F. B. Chavasse; Temp. Capt. V. L. Connolly; Capt. T. F. Corkill, Spec. Res.; Temp. Capt. G. T. Cregan; Temp. Capt. D. St. C. Creighton; Temp. Capt. E. P. Dark; Temp. Capt. H. B. Day; Temp. Capt. J. W. Dorling; Capt. W. B. FitzGerald; Temp. Capt. R. S. Gibson; Capt. J. C. G. Glassford, Australian A.M.C.; Capt. H. M. Goldstein, New Zealand M.C.; Temp. Capt. J. C. B. Grant; Temp. Capt. N. Grellier; Temp. Capt. F. Harris; Temp. Capt. H. H. Hepburn; Temp. Capt. J. Hill; Temp. Lt. R. G. Hill; Temp. Lt. W. J. Isbister; Temp. Lt. R. S. Kennedy; Temp. Capt. A. F. Laird; Temp. Capt. G. E. Lindsay; Temp. Capt. C. R. MacLeod; Temp. Capt. D. McVicker; Temp. Capt. J. I. O'Sullivan; Temp. Capt. W. H. Parry; Capt. J. A. Paterson; Temp. Capt. F. T. Rees; Temp. Capt. D. S. Robertson; Capt. G. W. Rogers; Temp. Lt. J. P. Ryan, Capt. J. E. Rusby, Spec. Res.; Temp. Capt. A. H. D. Smith; Temp. Capt. J. A. Smith; Capt. H. M. Spoor; Capt. R. A. Stark; Capt. J. Stephenson, Spec. Res.; Capt. W. H. E. Stewart; Temp. Capt. T. J. L. Thompson; Temp. Capt. E. A. Walker; Temp. Lt. T. C. D. Watt; Temp. Capt. H. F. Wilson.

OBITUARY OF THE WAR.

WILLIAM DUNCAN KIRKLAND, M.B., CH.M. SYD.,
MILITARY CROSS,
MAJOR, AUSTRALIAN ARMY MEDICAL CORPS.

Major W. D. Kirkland, who was recently killed on active service at the age of 26 years, was elder son of the late Lieutenant-Colonel Hugh Kirkland, M.B., Ch.M. Glasg., A.A.M.C. Born at Bathurst, N.S.W., he was educated at Coerwell Academy, Bowenfells, matriculating in 1908. Entering St. Andrew's College, Sydney, he graduated in medicine, with honours, in March, 1913, and became resident medical officer at the Royal Prince Alfred Hospital and later radiographer. After a brief but successful period of private practice at Lithgow, N.S.W., he enlisted in the Australian Imperial Force in May, 1916, and went to France in November. He had already held a commission in the Scottish Rifles, C.M.F., and was soon transferred to the Australian Army Medical Corps. He won the Military Cross by attention to wounded close to an ammunition dump in which shells were constantly exploding, and by his disregard of personal danger was instrumental in saving many lives.

Major Kirkland was a keen sportsman at school and college, which he represented in athletics. His friends feel the loss of one who was universally recognised as a pleasant companion and a capable and conscientious officer. He was unmarried.

JAMES ERNEST STUDHOLME WILSON, M.R.C.S. ENG.,
MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. E. S. Wilson, who died of wounds on August 23rd at the age of 31 years, was elder son of the late Rev. Studholme Wilson, for many years rector of Millbrook, Southampton, and Mrs. Wilson, of Stoneleigh, Newport, Salop. He was educated at Summerfields, near Oxford, and at Radley, took his medical course at the London Hospital, obtaining the Conjoint qualifications in 1911, and starting at once in general practice at Iver, Bucks.



In December, 1915, he obtained a commission in the Royal Army Medical Corps, attached to a Bucks regiment, and left with his battalion in the following May. Two months later he was awarded the Military Cross "for conspicuous gallantry and devotion to duty during operations," after having gone through a very heavy barrage to assist the wounded. His colonel writes of Captain Wilson's courage: "He was himself hit early in the evening, but insisted on going on with his work for six hours. His name," he adds, "will be a lasting and inspiring memory to the officers and men of his battalion."

Captain Wilson married, in 1912, Marjory, daughter of the late Thomas Ireland, of Mossley Hill, Liverpool, who survives him with an only child.

RONALD LENNOX HENDERSON, M.B., CH.B. EDIN.,
MILITARY CROSS,
CAPTAIN, AUSTRALIAN ARMY MEDICAL CORPS.

Captain R. L. Henderson, who died of wounds received in action at Bullecourt in May this year, graduated at Edinburgh University in 1903 before emigrating to New South Wales, where he practised for several years at Lismore. In July, 1915, he joined the Australian Army Medical Corps and was sent to Egypt, afterwards being attached for several months to No. 2 Stationary Hospital at Lemnos. When the Australian troops left for France he went with them and remained, except for a few months' illness, until the time of his fatal injury. He was hit in the leg in June, 1916, but refused to be evacuated, and tended the wounded of his unit with no thought of personal safety. A few days before being wounded himself he was awarded the Military Cross. His superior officer writes of him: "Always a splendid companion in times of stress, his kindly humour and steadfast devotion to duty made him a favourite with his fellow officers and his men. We have lost in him a man of exceptional courage and high character."

ANTHONY TRAILL, M.B., CH.B. OXON.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. Traill, who died at a casualty clearing station in France on August 25th, after a few days' illness, was 27 years of age and second son of Edmund B. Traill, of Pebmarsh, Essex, and Chirú, Traill, Argentina. He was born near Dublin, and educated at Charterhouse and New College, Oxford. While at Oxford he became president of the O.U.L.T.C. and won the challenge cup. From Oxford he went to Guy's Hospital, obtaining his medical degrees in 1915. In February, 1916, he received a commission in the Royal Army Medical Corps, and went to the front in the early part of this year. While still at Oxford he had a severe attack of hæmorrhage from a duodenal ulcer, and it was a recurrence of this trouble while attached to a regiment which was the cause of his untimely death. A promising career has been thus cut short.



EDMUND FITZGERALD BANNATYNE WILSON, M.D. DUB.,
MAJOR, SOUTH AFRICAN MEDICAL CORPS.

Major E. F. B. Wilson, who died as the result of an accident on August 17th, was educated at Trinity College, Dublin, taking the M.B., B.Ch. in 1881 and the M.D. in 1890. After practising for a few years in Ireland he went to South Africa, settling in Harrismith, Orange Free State. At the outbreak of the Boer War he was still in practice in this town, but managed to escape, and eventually was given a commission as a combatant in one of the Irregular Corps which were formed. This he held for a short time, when the need for doctors becoming acute he was utilised as a medical officer. He received the Queen's and King's medals for the campaign, and after the war returned to Harrismith, when he was appointed district surgeon and railway medical officer under the British régime. In this capacity he did much useful work, and was greatly esteemed in the town and district.

At the outbreak of the present world-war Major Wilson joined up for service with the Union Forces, and after suppression of the rebellion he was sent to German South-West Africa. At the conclusion of the campaign he joined the South African Overseas Expeditionary Force with the rank of major in the 1st South African General Hospital, and after some service with that unit in England proceeded with it to France. Although nearly 60 years of age, Major Wilson was of too energetic a temperament to remain with a general hospital, and after serving with the unit for a

short period he effected an exchange so as to be attached to the South African Heavy Artillery, and he also did short spells of duty with the cavalry and South African Field Ambulance. He died as a result of a fall from his horse.

Major Wilson leaves a widow and several children, one of whom is serving overseas in the Royal Flying Corps.

W. R. ASPINALL, M.B., CH.M. SYD.,
MILITARY CROSS,
CAPTAIN, AUSTRALIAN ARMY MEDICAL CORPS.

Captain W. R. Aspinall, who was killed on active service last July at the age of 25 years, was youngest son of the Rev. A. Aspinall, M.A., of Sydney, N.S.W. He was educated at the Scots' College, and from there passed to Sydney University. Here he showed a keen interest in all branches of athletics, and won his football "Blue" in his second year. He was captain of the team when war broke out, and the same year played for New South Wales. He also took a leading position in the social life of the University, and was elected Vice-President of the Union. Graduating M.B., Ch.M. with honours in September, 1915, he was appointed house surgeon at Sydney Hospital.

Early in 1916 he joined up, and served some time in Egypt before being invalided to England with pneumonia. He went to France later in the year, and after serving some months with a field ambulance on the Somme, was attached to a field artillery brigade. After several months of consistently fine work, he was awarded the Military Cross for conspicuous gallantry under most trying circumstances. During a serious attack he worked all day under heavy machine-gun and shell fire without cover, tending friend and foe alike, with absolute disregard for his own safety. He was killed at his guns. In the trenches, as in other walks of life, he set a standard of personal courage and cheerfulness under all conditions that gained him universal respect.

ARMY MEDICAL TRAINING IN AMERICA.—A correspondent writes from the Medical Officers' Training Camp, Fort Benjamin Harrison, Indiana: "We are getting a great amount of thorough instruction. The ground is gone over rapidly, possibly because of the shortness of time allowable before our services are needed. The men are buckling down, and almost without exception are earnest and patriotic in their work. It is a remarkable thing to see popular and successful physicians and surgeons giving up fine incomes and living in this great army training camp and putting up cheerfully with its lack of conveniences. There are some 1200 M.D.'s here now, besides line officers, all getting ready to go out to care for and train the hundred thousands of our new draft army."

THE NATIONAL WAR AIMS COMMITTEE'S LEAFLETS.—The National War Aims Committee has issued a series of leaflets of a very opportune sort. The first 15 are: (1) Prime Minister's Speech; (2) Interview with General Sir W. Robertson; (3) What Are We Fighting For?; (4) There Must Be No "Next Time"; (5) Winning the War; (6) The Nation Made War and the Nation Must Make the Peace; (7) The Truth About the War; (8) Labour and the War; (9) President Wilson on Peace Terms and War Aims; (10) The Kaiser Manner; (11) The Greatest and the Last Crusade; (12) "Gentlemen" of Germany; (13) Peace at Germany's Price?; (14) Right and Might: a Lesson which Germany Must be Made to Unlearn; (15) A Kalendar of "Kultur." Of these, No. 10, The Kaiser Manner, consisting of only one leaf, is perhaps the one which will attract most attention, as most of the other speeches have been read in the daily newspapers more than once. The reverse of this leaf contains a reproduction, by the special permission of the proprietors of *Punch*, of a drawing by Bernard Partridge, entitled the "Knightly Manner," and depicts the Kaiser in armour standing over the prostrate body of the female personification of Belgium, who says, "As long as there is motion in my body and life to give me words I'll cry for Justice," to which the Kaiser replies, "Justice shall never hear you, I am Justice." This is explained parenthetically by a reminder as follows: ("There is no longer any international law."—The Kaiser to Mr. Gerard.) This powerful picture will entice the observer into a reverie of right and wrong, and truth and fiction; it is founded on a passage in Beaumont and Fletcher.

Correspondence.

"Audi alteram partem."

A STATE-AIDED MIDWIFERY SERVICE.

To the Editor of THE LANCET.

SIR,—The time has arrived when the question of the midwifery service of the country merits consideration. The Act of 1902 was mainly the work of "those who claim that they are generally considered to be most competent to advise on such a subject"—namely, the Fellows of the Royal College of Physicians of London. The very large majority of the medical profession were, and are, only too well aware that the subject is in the main one of economics, and can never be settled by the establishment of a State-controlled body of nurses.

The result of legislation has been that districts which cannot support a midwife have remained unprovided for, although a bulky tome is annually issued which contains the names of thousands of women who are licensed to practise. Improvement can only be obtained by a process of decentralisation. The money which is now spent upon the operations of the Midwives Board should be devoted to work carried on by sanitary authorities, and that Board should be abolished. Sanitary authorities have now organisations for carrying on the work and are quite competent to decide upon the fitness of the women they employ, and they should be subsidised out of the money saved by the extinction of the Midwives Board.

The attempt to make a new class of midwifery practitioners has failed, and if the establishment of such a class is desired a sufficiently equipped class must be made and the subject of midwifery removed from the compulsory subjects of medical students. At the present time midwives do not occupy a position which is quite fair to them. They are not considered to be competent to carry out their work without the aid of stringent rules and regulations. They consequently have no responsibility so long as these rules are obeyed. Some are incompetent and others competent, and no rules will make those competent who are incompetent. If a sufficient class must be obtained it must be a class who are so competent that their work can be carried on without rules and regulations.

The repeal of the Act of 1902 is urgently required.

I am, Sir, yours faithfully,

Hatfield, Oct. 1st. 1917. LOVELL DRAGE.

*** Dr. Lovell Drage attributes much to Fellows of the Royal College of Physicians of London. The General Medical Council, after deliberations in which the representatives of all the medical faculties and corporations took part, suggested many changes in legislation in the Bill which later became law. The question to which he alludes has already become urgent, and we publish this week notes on the course taken in St. Pancras and at Chelmsford.—ED. L.

SACRO-ILIAC STRAIN.

To the Editor of THE LANCET.

SIR,—I beg permission to contribute a few observations on the annotation in your issue of Sept. 29th on the above-named condition. It is true indeed "a lesion which the general practitioner often sees but fails to recognise," but whether this is "because it has been described only in recent years, mainly by American orthopædic surgeons," is open to question. A much more potent reason is that it has not been accepted as a clinical entity by English surgeons at all. When I read a paper[1] on the subject, with numerous references to the literature and notes of nine cases, before the Orthopædic Section of the Royal Society of Medicine in 1913, it was greeted with buckets of cold water, the President cynically remarking that in all his experience he had never been fortunate enough to meet with a single case; and when I have tried to interest others in this condition I have been received with looks of blank incredulity. The condition, of course, undoubtedly exists, and the medical profession should be most grateful to you for making it known. Its dominant feature, however, is not pain over "the sacro-iliac point" in front, but

[1] See Transactions of the Royal Society of Medicine, vol. vii.

pain over the sacro-iliac joint behind. I have seen many cases now, but never one in which this sign was absent.

As regards treatment, does not your annotation present altogether too rosy a view? "Treatment is simple and gives most satisfactory results." I have found treatment most difficult and disappointing, having only been able to cure completely two cases. The keynote of the treatment is to compress the two halves of the pelvis together, but in actual practice this is not easy. Encircling strips of plaster applied tightly cause sores at their edges after one or two days, and have to be left off while the sores heal; belts have all proved unsatisfactory, while manipulation under an anæsthetic relieves for a time, only to be followed by a recurrence of the trouble. The best apparatus has proved to be an ordinary corset with reinforcing webbing bands around the pelvis.

Finally, as to nomenclature. For reasons I do not propose to enter into here, there are many objections to the term "sacro-iliac *strain*." These are all got over by describing the condition as "*painful* sacro-iliac joint."

I am, Sir, yours faithfully,

Harley-street, W., Sept. 29th, 1917. PAUL BERNARD ROTH.

A WAR MEMORIAL TO OLD EPSOMIANS.

To the Editor of THE LANCET.

SIR,—Two informal meetings of old Epsomians have been held regarding the question of raising a memorial to old Epsom boys who have fought and fallen in this war. It was decided that a meeting should be held at the offices of the College, 37, Soho-square, London, W., at 4 P.M., on Friday, Oct. 12th. It is hoped to get an expression of opinion at that meeting as to whether such a memorial should be raised, how it should be raised, and what form such a memorial should take. A treasurer and secretaries for this memorial fund will be appointed. The Rev. W. Barton, the headmaster of the school, and myself are acting as secretaries until the regular appointments are made. As addresses are so uncertain it has seemed desirable to notify old Epsom boys of this meeting through the newspapers. Will all who can come to the meeting, and will those who cannot come express their views in a letter addressed to me?

I am, Sir, yours faithfully,

EDRED M. CORNER.

7, Harley-street, London, W.1, Sept. 28th, 1917.

A CASE OF PERIODIC ATTACKS OF PYREXIA.

To the Editor of THE LANCET.

SIR,—The case recorded by Dr. R. V. Solly under the above heading in your issue of Sept. 8th (p. 386) has considerable resemblance to one of rat-bite fever. The regular pyrexial attacks with high temperature and "well" intervals, the erythematous eruption, the cessation of the disease after the administration of galyl, and the seven-weeks' duration before the pyrexial attacks began to become irregular, all coincide closely with the course of a case of rat-bite fever.

I am, Sir, yours faithfully,

R. TANNER HEWLETT, M.D. Lond.

Chandos-street, W.C., Sept. 24th, 1917.

"RECONSTRUCTION."

To the Editor of THE LANCET.

SIR,—I have read with great pleasure the leading article entitled "Reconstruction" in your issue of Sept. 15th, and warmly welcome the suggestion of the formation of a board such as you put forward to consider and interpret facts relating to professional reconstruction after the war. Since the outbreak of war there has been a tendency on the part of certain of those remaining at home to try to create a new Heaven and new earth, in the absence of their betters, with themselves as archangels. This tendency has resulted in a complete revolution of our political electorate, and now threatens an equally drastic change in our professional status. Apart from the impertinence, which surely is sometimes evident, it is also an injustice. During the last two years I have been in many parts of the world, and I can only say that amongst the hundreds of medical officers that I have met there exists a real mistrust as to our future status—a general feeling that our interests are being neglected and that our future is being decided overmuch by the "indispensables" and the "embusqués," who suffer from glib tongues and lately from overweighted pockets. I hope that others will give you their views on the matter, especially those connected with medical units serving abroad.

I am, Sir, yours faithfully,

A. HURRELL STYLE, M.A., M.D. Cantab.,
Temporary Captain, R.A.M.C.

Royal Societies Club, St. James's-street, S.W., Sept. 28th, 1917.

THE SERVICES.

ARMY MEDICAL SERVICE.

Temp. Col. F. M. Caird (Lieutenant-Colonel, R.A.M.C.T.F.) relinquishes his temporary rank on re-posting.

Temporary Lieutenant-Colonels to be temporary Colonels: Sir T. Myles, C.B., Sir W. A. Lane, C.B., J. Swain, C.B., Sir B. G. A. Moynihan, C.B., W. Taylor, A. Carless, Sir A. Chance, A. W. Mayo Robson, C.V.O., C.B., C. J. Symonds, C.B., C.M.G., T. H. Openshaw, C.B., C.M.G., W. Hunter, C.B., W. Aldren Turner, C.B., H. M. Davy, C.B.

Honorary Lieutenant-Colonels to be temporary Honorary Colonels: J. L. Thomas, C.B., C.M.G., J. F. O'Carroll.

ROYAL ARMY MEDICAL CORPS.

Major A. N. Fraser, D.S.O., to be temporary Lieutenant-Colonel whilst commanding a Training Centre.

Temp. Major R. Davies-Colley to be temporary Lieutenant-Colonel whilst specially employed.

Major (Bt. Lieut.-Col.) H. J. Crossley to be acting Lieutenant-Colonel whilst in command of a Stationary Hospital.

Major (Bt. Lieut.-Col.) H. J. Crossley relinquishes the rank of acting Lieutenant-Colonel on re-posting.

Major (Bt. Lieut.-Col.) C. R. S. Bradley relinquishes the rank of temporary Lieutenant-Colonel on ceasing to command a Training Centre.

Temp. Capt. E. P. G. Causton to be temporary Major.

H. H. K. Sparrow and P. A. Sullivan, late temporary Captains, to be honorary Captains.

Temp. Lieuts. to be temporary Captains: H. McLean, R. A. Campbell, R. A. MacNeill, G. H. Fraser, J. M. Johnstone, J. J. Moriarty, T. T. B. Watson, T. H. Jackson, J. A. Noble, J. H. Sharpe, W. E. Hodgins, A. S. Carter, T. Jones, A. H. Davies, R. H. Stoddard, E. E. T. Nuthall, F. P. Wigfield, F. Stevenson, J. McN. Murray, V. E. Somerset, J. C. M. Bailey, R. K. G. Graves, F. Newey, N. N. Haysom, E. G. Howell, C. H. Comerford, R. J. MacKessack, P. Pollard, J. A. Renshaw, A. H. H. Howard, D. G. S. Gartshore, L. C. Blackstone, C. S. U. Rippon, H. D. Stewart, A. Fothergill, H. V. Taylor, J. G. Johnstone, M. C. Stark, C. D. Day, J. W. Steel, R. W. Annison, K. H. Stokes, W. A. Simpson, J. Warnock, J. E. P. Shera, N. C. Lake, C. F. Graves, A. S. Holden, A. H. Burnett, C. C. Morgan, N. Davidson, A. C. Craighead, T. L. Henderson, A. Kerr, W. C. Fraser, K. McLay, W. W. Johns, W. S. Angus, H. G. E. Williams, J. B. Whitfield, J. M. Jarvie, F. W. Murray, R. J. Wilson, J. D. Judson, W. R. Wiseman, D. G. C. Tasker, G. E. A. Petrie, H. F. Woods, A. Duguid, R. S. Barker, W. L. Johnson, F. W. Grant, C. Tylor, P. Henderson, G. A. Lyons, T. D. H. Holmes, T. Jackson, H. S. Banks, F. G. Bergin.

To be temporary honorary Lieutenants: B. E. Hawke and C. H. Evans.

Officers relinquishing their commissions: Temp. Major W. D. Knocker (on account of ill-health); Temp. Capts. F. W. Lyle (granted the honorary rank of Captain), H. de C. Dillon (on acount of ill-health contracted on active service; granted the honorary rank of Captain), M. A'B. McCarthy (granted the honorary rank of Captain), J. Brunton, N. Grace, S. G. Vinter, C. H. Brookes, J. S. S. Perkins, A. H. H. Sinclair, W. J. Hicks, W. J. Gow, C. D. Pile, F. C. Drew, A. S. Anderson, A. G. Watson. Temporary Lieutenants: P. E. Howie (on account of ill-health), A. T. Thurston, R. Lee, R. Jones, D. Penman, G. Holman, J. Mellor, W. S. Kidd, H. W. Heasman, N. F. Stallard, W. H. Gray, J. R. Kerr, J. Loftus, A. F. Martin, M. Waldron, J. S. F. Weir, J. Findlay, R. S. Doran, C. H. Houghton, H. Nicol, R. H. Jamieson, T. H. Underhill, T. A. Matthews, J. M. Hall, E. J. Fitzgerald, H. G. Ramsbottom, W. R. Bramley-Moore, H. A. Fenton, S. J. Yeates, J. H. C. Thompson, S. J. Moore, W. S. McDougall, J. T. Bailey, W. McM. Millar, H. H. Riley, E. G. Fearnsides, T. G. Maitland, J. E. Richards, G. F. Longbotham, J. B. McCutcheon, J. D. S. Sinclair, W. Garstang, J. R. Frost, E. W. Atkinson, G. R. Hughes, J. R. Micallef, A. Kinsey-Morgan.

SPECIAL RESERVE OF OFFICERS.

Second Lieut. S. Riddiough, from Unattached List, T.F., to be Lieutenant.

TERRITORIAL FORCE.

Major (temp. Lieut.-Col.) E. H. Cox relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. C. E. Silvester to be Major.

Capts. T. M. Jamieson and E. H. E. Stack are restored to the establishment.

Capt. (temp. Major) W. B. Secretan relinquishes his temporary rank on alteration in posting and is restored to the establishment.

Capts. H. N. Fletcher and F. A. S. Hutchinson are seconded for duty with a General Hospital.

Capt. J. D. Holmes is restored to the establishment.

Second Lieut. C. P. Matthews, from East Surrey Regiment, to be Lieutenant.

F. Isdell to be temporary Lieutenant and Medical Officer, 4th Battalion, Essex Volunteer Regiment.

JAPANESE ORDER.

The Order of the Sacred Treasure of the First Class has been conferred on Surg.-Gen. Sir Arthur William May, K.C.B., K.H.P., by the Emperor of Japan.

Medical News.

VICTORIA UNIVERSITY OF MANCHESTER.—At the First M.B. and Ch.B. examination, held recently, the following candidates were successful:—

Part I., Inorganic Chemistry and Physics.—R. S. van Aalten, O. A. Akjaly, Nancy E. Beakley, Caroline M. Edwardes-Evans, T. N. Fisher, Kath. M. Fullerton, Ruth Hill, C. D. Hough, Jessie Kilroe R. R. Lane, W. L. Martland, A. C. Newman, El. S. El. G. Sheir, Mary I. Turner, and Leo Unsworth.

Part II., Biology.—O. A. Akjaly, Cath. M. E. S. Chapman, and Emmeline Wade.

Chemistry.—Cath. M. E. S. Chapman and Emmeline Wade.

MEDICAL SOCIETY OF LONDON.—The programme of the first half of the session 1917–18 has now been issued. The annual meeting, as announced, will take place on Oct. 8th, at 8 P.M. The address of the President, Sir StClair Thomson, on "The Founder and the Foundation of the Medical Society," will be delivered at 8.30, and will be followed by a discussion on "War Bread and its Effect on Health," to be introduced by Dr. Robert Hutchison and Dr. E. I. Spriggs. On Oct. 22nd a discussion on "Modern Artificial Limbs and their Influence upon Methods of Amputation" will be introduced by Mr. Muirhead Little and Captain R. C. Elmslie, R.A.M.C. (T.). On Oct. 29th a paper will be read on "Experiences in the Use of Nitrous Oxide and Oxygen with Regulated Rebreathing in Military Surgery at the First London General Hospital," by Captain H. Edmund G. Boyle, R.A.M.C. (T.). On Nov. 12th and 19th there will be a discussion on "The Value and Limitations of Sanatorium Treatment for Tuberculosis," in which Dr. T. D. Lister, Dr. David Lawson, Dr. Noel Bardswell, and Dr. Wilfred O. Meek will take part. On Dec. 3rd a discussion on "Surgical and Dental Treatment of Severe Facial Injuries" will be introduced by Major H. D. Gillies, R.A.M.C., Captain Kelsey Frey, R.A.M.C. (T.), and Mr. Percival Cole. All the ordinary meetings will be held at 8.30 P.M. The Lettsomian lectures on "Jaundice" will be delivered in the spring of 1918 by Colonel William H. Willcox, C.B., C.M.G. The annual Oration will be delivered by Colonel Charles A. Ballance, C.B., M.V.O., in May, 1918. The syllabus for the second half of the session will be published early in January, and Fellows desirous of reading papers should communicate with Mr. Hugh Lett, the senior honorary secretary, at 11, Chandos-street, Cavendish-square, W.1.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A series of demonstrations has been arranged for the winter session, 1917, at the Prince of Wales's Hospital, Tottenham, to which all medical men are invited. The subjects are as follow: Nov. 6th, Mr. C. H. Hayton, Nose, Ear, and Throat Disease; Nov. 13th, Mr. J. Howell Evans, Abdominal Injuries; Nov. 19th, Dr. T. R. Whipham, Children's Diseases; Nov. 27th, Dr. A. J. Whiting, Medical Cases; Dec. 5th, Mr. T. H. C. Benians, Disease Carriers. The time in each case is 3.30 P.M.

KING EDWARD'S HOSPITAL FUND FOR LONDON: STATISTICAL REPORT.—The need for and benefits of economy which the nation is now realising, owing to the exigence of war, have for several years been thoroughly recognised by all who are interested in the welfare of our great healing institutions, and since the advent of King Edward's Hospital Fund for London the economy of hospital administration redounds to the credit of all concerned. With the object of assisting hospital managers and others in controlling expenditure the King's Fund, as our readers know, issues an annual statistical report, and that for the year 1916 (the fourteenth), dealing with the ordinary expenditure of 69 London hospitals, which has just been issued, clearly demonstrates the need for support and the worthiness of these institutions for the sick poor and for the healing of our sailors and soldiers. In 1916 the total number of beds in average daily occupation was 11,406, while the total number of in-patients admitted was 153,512 and the number of out-patients attended 1,251,019. Of the in-patients 27,328 were naval and military patients treated by understanding with the authorities, and the 2855 beds thus occupied represented 25 per cent. of the total average occupied beds. The total average number of occupied beds was raised from 9766 in 1913 to 11,406 in 1916, an increase of 1640 beds, from which it follows that 1215 of the number of beds occupied by the naval and military patients were taken from those previously used by civilians, the remaining 1640 beds for war patients being provided for by an increase in the total accommodation at the hospitals. The total ordinary expenditure during the year, including maintenance, administration, rent, rates, and taxes, but excluding capital expenditure, interest on borrowed money, and contributions to the maintenance of convalescent homes and country branches, amounted to £1,513,834. The receipts from the authorities in aid of naval and military patients was £218,087. Comparing the year 1916 with 1915 the increased expenditure borne by the hospitals amounted to £104,540, or 8·77 per cent., caused almost entirely by the rise in cost of all items of maintenance. As is pointed out by the secretaries of the Fund, "the increase in total work, with the consequent increase in total expenditure, constitutes an enlarged demand upon the voluntary subscriptions of the charitable public, and renders more than ever important the grants made by this Fund and by the Hospital Sunday and Saturday Funds." The report can be obtained from Messrs. Spottiswoode, Ballantyne, and Co., 1, New Street-square, E.C. 4, price 1*s.* net, or 1*s.* 2*d.* post free.

MEDICO-LEGAL SOCIETY: SESSION 1917–1918.—A meeting will be held at 11, Chandos-street, Cavendish-square, W., on Tuesday, Oct. 16th, at 8.30 P.M., the Right Hon. Sir Samuel Evans, president of the society, in the chair. After the presidential address a discussion will take place on the Criminal Law Amendment Bill (1917), introduced by Dr. F. J. Smith. Members desirous of participating in the discussion should communicate their names to Dr. F. G. Crookshank, 15, Harley-street, W.1, the senior honorary secretary, before the meeting. The presence of visitors interested in the subject will be welcomed.

PRESENTATION TO A MEDICAL MAN.—Mr. James Munce, medical officer of Drumbeg Dispensary, co. Down, was on Sept. 28th, at Hillhall schoolhouse, presented with a packet of Treasury notes and a gold pin, and his wife with a piano, as indications of personal appreciation on the part of a wide circle of patients and friends, the occasion of the presentation being the doctor's recovery from a severe illness.

DOCTORS CALLED IN BY MIDWIVES.—The St. Pancras borough council proposes for an experimental period of one year to make payments to medical practitioners when called in by midwives in cases of emergency upon the statement of the medical practitioner that the patient is in his opinion unable to pay. Subject to its being accepted by the local branch of the British Medical Association the scale of payment to the medical practitioners will be fixed as follows: 1 guinea for a normal confinement and 2 guineas for a confinement presenting special difficulty or requiring operative interference, including in each case the necessary subsequent attendances, and for calls not for the confinement itself, but before or after confinement 5*s.* for the first visit (10*s.* 6*d.* if between 9 P.M. and 9 A.M.) and 2*s.* 6*d.* for each subsequent visit. In his report on the subject Dr. T. Shadick Higgins, the medical officer of health of the borough, says that for the avoidance of payment from public funds in cases where it could be made by the patient, the scheme would depend upon the doctors refraining from asking for fees from the council in such cases; but for the success of the scheme it is essential that the doctors should be assured of payment by the council if they render an account with a statement of their opinion of the inability of the patient to pay. The scale of payment set out above can be taken as a basis, but before a scheme is adopted it would be necessary to get not only the concurrence of the local practitioners but also the approval of the Local Government Board.

URBAN VITAL STATISTICS.

(Week ended Sept. 29th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 10·8, against 10·6 and 11·1 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 11·2, or 0·1 per 1000 above that recorded in the previous week; among the remaining towns the death-rates ranged from 4·1 in Aberdare, 4·4 in Enfield, and 5·0 in Dewsbury, to 15·8 in Newport (Mon.), 16·2 in Acton and in Rochdale, and 17·3 in Tynemouth. The principal epidemic diseases caused 397 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 267 from infantile diarrhœa, 47 from whooping-cough, 35 from diphtheria, 29 from measles, 14 from enteric fever, and 5 from scarlet fever. The deaths from diarrhœa, which had been 320, 262, and 344 in the three preceding weeks, declined to 267, and included 55 in London, 19 in Liverpool, 16 in Hull, 15 in in Sheffield, and 11 in Sunderland. The 816 cases of scarlet fever and 1123 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 84 and 41 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 146 resulted from violence. The causes of 16 deaths were uncertified, of which 4 were registered in Liverpool and 2 each in Birmingham and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was equal to 11·9, against 10·8 and 11·6 per 1000 in the two preceding weeks. The 256 deaths in Glasgow corresponded to an annual rate of 12·0 per 1000, and included 13 from infantile diarrhœa, 5 from whooping-cough, and 2 from diphtheria. The 85 deaths in Edinburgh were equal to a rate of 13·4 per 1000, and included 3 from whooping-cough and 1 from diphtheria.

Irish Towns.—The 96 deaths in Dublin corresponded to an annual rate of 12·5, or 4·1 per 1000 below that recorded in the previous week, and included 16 from diarrhœa, 2 each from whooping-cough and diphtheria, and 1 from enteric fever. The 81 deaths in Belfast were equal to a rate of 10·7 per 1000, and included 2 from diarrhœa.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

HICHENS, F., M.D. Lond., has been reappointed Medical Officer for Stythians by the Redruth Board of Guardians.

MEACHEN, G. N., M.D., B.S. Lond., has been appointed Tuberculosis Officer for the Saffron Walden and Braintree District of Essex.

SIMPSON, S., M.B., B.Ch. Dub., District Medical Officer and Public Vaccinator for the parish of Llanelly, Brecon.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BETHNAL GREEN, METROPOLITAN BOROUGH OF.—Female Assistant Medical Officer of Health. Salary £400 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £175 per annum, with board, &c.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Resident Medical Officer and House Surgeon. Salary £200 and £150 per annum respectively each, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—House Surgeon and House Physician. Salary at rate of £300 per annum each, with board, &c.

CHARING CROSS HOSPITAL.—Medical Registrar. Salary £60 per annum, with lunch and tea.

COLMONELL PARISH, LOWER DISTRICT OF.—Medical Officer. Salary £70 per annum. Vaccination salary £2 per annum.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Resident Surgical Officer.

KENSINGTON BOARD OF GUARDIANS.—Resident Medical Superintendent for Marloes-road Institutions. Salary £650 per annum, with use of house, &c.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident House Physicians for six months. Salary at rate of £90 per annum each, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer. Salary £120 per annum, with board, &c.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female Resident Medical Officer at House of Recovery, New Barnet. Salary £60 per annum, with board, &c.

NOTTINGHAM GENERAL HOSPITAL.—Female House Surgeon for six months. Salary at rate of £250 per annum, with board, &c.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon. Salary £200 to £250 per annum, with board, &c.

OLDHAM ROYAL INFIRMARY.—Third House Surgeon. Salary £225 per annum, with board, &c.

OXFORD EYE HOSPITAL.—Resident House Surgeon.

PORTSMOUTH BOROUGH MENTAL HOSPITAL.—Locum Tenens Assistant Medical Officer. Salary 7 guineas per week, with board, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Senior House Surgeon. Salary at rate of 7 guineas per week, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident House Surgeon. Salary £100 per annum, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—Casualty Officer for six months. Salary £150 per annum, with board, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, &c.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

WALSALL EDUCATION COMMITTEE.—Temporary School Medical Inspector. Salary at rate of £400 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House Surgeon, unmarried. Salary £160 per annum, with board, &c.

WHITEHAVEN TOWN COUNCIL AND RURAL DISTRICT COUNCIL.—Medical Officer of Health. Salary £500 per annum.

WINCHESTER, HAMPSHIRE COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health. Salary £400 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Hastings (Sussex) and at Cleator (Cumberland).

Births, Marriages, and Deaths.

BIRTHS.

HUTCHINSON.—On Sept. 26th, at Lower King's-road, Kingston-on-Thames, the wife of Major E. L. Hutchinson, A.A.M.C., of a daughter.

ROSS HADDON.—On Sept. 25th, at Overstrand-mansions, S.W., the wife of Captain D. A. Ross Haddon, M.C., R.A.M.C., of a daughter.

WARREN.—On Sept. 22nd, at Arden Cottage, Greenford-gardens, Greenford, Southall, to Captain and Mrs. Richard Warren, of 23, Wimpole-street, W.—a daughter.

MARRIAGES.

ARMOUR—JOHNSTON.—On Sept. 27th, at St. Luke's Church, Liverpool, T. Armour, M.B., F.R.C.S. Ed., Captain, R.A.M.C., T.F., to Margaret Johnston, daughter of the late Mr. H. Johnston.

HILTON JONES—DAVIES BRYAN.—On Sept. 25th, at Engedi C.M. Chapel, Carnarvon, Captain R. Orthin Hilton Jones, M.C., R.A.M.C., to Olwen, only child of Mr. and Mrs. Edward Davies Bryan, of Cairo, Egypt, and Carnarvon.

PARKINSON—LE BROCQ.—On Sept. 29th, at St. Michael's Church, Southampton, John Parkinson, M.D., M.R.C.P., Temporary Captain, R.A.M.C., to Clara Elvina Le Brocq, late Sister Q.A.I.M.N.S.R.

DEATHS.

BULL.—On Sept. 16th, killed in action, Captain B. A. Bull, R.A.M.C., attached London Regiment.

HARDIE.—On Sept. 20th, died of wounds, Captain F. Hardie, R.A.M.C. (T.).

ROBERTS.—On Sept 27th, Arthur Milson Roberts, M.D., aged 69.

WALKER.—On Sept. 30th, at Edgbaston, R. P. Walker, M.R.C.S. Eng., L.S.A., in his 84th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

LEA AND FEBIGER, Philadelphia and New York.
The Treatment of Diabetes Mellitus, with Observations upon the Disease, based upon 1300 Cases. By E. P. Joslin, M.D. Harv. Second edition, revised. $4.50.

LONGMANS, GREEN, AND CO., London; University Press, Manchester.
Founders' Day in War Time. An address delivered on March 23rd, 1917, at a memorial service for members of Manchester University who have fallen in the War. By Sir Adolphus William Ward, Litt.D., F.B.A. 1s. 6d. net.

MACMILLAN AND CO., London.
Human Physiology. By Professor Luigi Luciani (Rome). Translated by F. A. Welby, with Preface by J. N. Langley, F.R.S. Vol. IV. Edited by Gordon M. Holmes, M.D. The Sense Organs. 21s. net.

MENTAL CULTURE ENTERPRISE, 329, High Holborn, W.C.1.
The Principles of Rational Education. By Charles A. Mercier, M.D., F.R.C.P., F.R.C.S. 2s. 9d. net.

PITMAN, SIR ISAAC, AND SONS, London.
Soap: its Composition, Manufacture, and Properties. By W. H. Simmons, B.Sc. Lond., F.C.S. 2s. net.

PUTNAM'S (G. P.) SONS, London and New York.
Hygiene in Mexico. A Study of Sanitary and Educational Problems. By Alberto J. Pani, C.E. Translated by Ernest L. de Gogorza.

SANITARY PUBLISHING COMPANY, London.
Sanitary Law and Practice. By W. Robertson, M.D. Glasg., D.P.H., and Charles Porter, M.D., B.Sc., M.R.C.P. Edin. Fourth edition, revised. 12s. 6d. net.

UNIVERSITY OF CHICAGO PRESS, Chicago.
Food Poisoning. By Edwin Oakes Jordon, Chairman of the Department of Hygiene and Bacteriology, University of Chicago. $1 net.

WRIGHT, JOHN, AND SONS, Bristol.
Blood Pictures. An Introduction to Clinical Hæmatology. By Cecil Price-Jones, Captain, R.A.M.C. (T.). 6s. 6d. net.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 3rd, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Sept. 27	0·05	99	67	52	52	53	Fine
,, 28	...	89	64	50	52	54	Fine
,, 29	...	102	66	52	53	54	Fine
,, 30	...	96	70	48	53	54	Fine
Oct. 1	...	92	70	50	51	52	Fine
,, 2	...	95	72	48	51	52	Foggy
,, 3	...	93	66	52	57	59	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—The two Goldsmid Entrance Exhibitions, offered annually for competition in September, were awarded this year to Mr. H. L. Heimann and Mr. V. R. Khanolkar, both of University College, London.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.—A course of lectures on Tropical Hygiene will be given by Mr. H. G. Plimmer, F.R.S., professor of comparative pathology, in the lecture-room of the Botany Department of the College, Prince Consort-road, South Kensington, London, S.W., on Tuesdays from 4–5 P.M., during the first half of the session 1917–18, beginning on Oct. 9th. The course is intended for officers in H.M. Forces who are likely to be sent to hot countries, and will deal with infectious diseases, their causation and prevention; advice as to the maintenance of health in tropics; and the treatment of minor complaints and injuries. The fee for the course is £1. Application to the Registrar of the Imperial College.

Notes, Short Comments, and Answers to Correspondents.

GILBERT AND ELLICE ISLANDS.

A REPORT recently presented to Parliament on these two groups of islands in the Pacific—formerly constituting a Protectorate, but formally annexed to the Empire in 1915—contains some interesting references to the health and medical administration of the territory. The Gilbert group, situated between 4° N. and 3° S. latitude and 172° and 177° W. longitude, consists of 16 islands, with several smaller islands or islets depending upon them; and the Ellice group, between 5° S. and 10½° S. latitude and 176° E. and 179·58° W. longitude, consists of nine islands (in which Ocean Island, or Paanopa, is included). The total area of the two groups is only 180 square miles, and the population, according to the Census of 1911, comprised 30,523 natives, 301 Asiatics, and 297 Europeans. The births recorded in 1915–16 totalled 959 and the deaths 726.

In the Gilbert Islands a serious epidemic of influenza carried off many old people and weaklings in 1914-15, but the figures for 1913-14 and 1915-16 were most satisfactory in view of the fact that for many years previously the population of the islands was decreasing to such an extent that it was predicted that the race would soon be exterminated owing to contact with civilisation. It is true that the white man introduced syphilis and was probably responsible for the scourge of tuberculosis, but medical science is using every effort to restore the balance and to bring relief and improved health to these simple and kindly folk. During the past three years the expenditure on the medical department has been very largely increased. There was a time when sickness was hidden and when medical inspection visits were feared. In 1913-14 a determined effort was first made to put the medical department on a sound footing. It was realised that this result could not be achieved by the importation of medical skill only; it was essential to catch and to hold the interest and confidence of their own people, to demonstrate that the power to alleviate and to heal could be learnt by their kith and kin, and that operations were not hazardous miracles to be performed in secret under the white man's spell. It is already evident from statistics that some measure of success is being attained. In spite of the difficulty of transport due to the need of a Government vessel and to the curtailment of the trading steamer service in war-time, the number of cases admitted into the hospitals and the operations performed are proof that these people have realised what medical attention can do for them.

The results of the treatment of yaws by salvarsan, or by its equivalent galyl or kharsivan, confirm the reports from the West Indies and elsewhere. The native name given to this drug is "Te Iti" or "lightning," from the marvellous rapidity of the cure. Satisfactory results have also been obtained by the use of this drug in cases of syphilis, which is prevalent still in the groups; this, however, is naturally a slower process, especially in its advanced stages. It is, unfortunately, still difficult to get the patient to realise the gravity of this disease in the early stages. The need for a plentiful supply of galyl or kharsivan cannot be too earnestly insisted on. In cases of elephantiasis, prevalent in several of the islands, kharsivan has also been used with good results.

The treatment of tuberculosis, the greatest scourge of the colony, is a matter which calls for the patience and perseverance of those on the spot. Tuberculin may be used in surgical cases, but the various precautionary measures do not appeal to the careless, easy-going native. Tuberculosis is believed to have been originated amongst these people by the wearing of European dress, which led to the discontinuance of the practice of oiling the bodies, which was formerly done as soon as the cold westerly winds set in with heavy rains. Though efforts have been made to persuade the natives to revert to their native dress and to the lubrication of the body, it is feared that the attempt has been made too late. It is natural that the traders are averse to this, since probably 50 per cent. of the money which they pay out for produce comes back to them from the sale of tropical clothing to natives. The missions also have shown no wish to help this movement. "Shirts and trousers for men, and the long-sweeping garment for women, are the outward signs of Christianity; it is practically only among pagans and in the Government gaols that the sensible native dress may now be seen."

The headquarters of the medical staff are at Tarawa, with branch European-run hospitals at Tabiteanea in the Central Gilberts and at Funafuti in the Ellice group. The institution of a training school for native medical students at Tarawa has proved a great boon to the colony. The natives have come forward readily for instruction, and every island is now in charge of a medical dresser of fair experience. As opportunities of relief offer these dressers return to the Central Hospital for a further period of instruction, and the standard of efficiency is gradually raised throughout the native hospitals. During the year 1175 cases were admitted to the Tarawa Central Hospital and 619 operations were performed. At the Funafuti hospital 555 cases were admitted and 180 operations performed. Since November, 1915, the European medical staff has again been reduced to one; this officer is, however, ably assisted by two native medical practitioners, to one of whom (Sowani) the colony is indebted for many years of most faithful and efficient service. The services of a white matron have now been acquired for the Tarawa hospital, and a scheme for the training of half-caste girls as maternity nurses has been started. During the year a white ward for the treatment of European patients has been opened and has already proved useful.

The erection and equipment of a leper asylum upon an isolated islet awaits acquisition of a Government vessel for the collection of cases. Each island is at present equipped with its own asylum, but there is always danger of contact or intercourse, and this scourge cannot be wiped out until a central isolated asylum can be constructed and maintained with the assistance of a Government vessel.

THE SUPER-HEN.

To the Editor of THE LANCET.

SIR,—Amongst some eggs which I bought last week there was one which was rather large, and which I voted was the progeny of a goose and included in my purchase by mistake. On cracking it it yielded two fine yelks. I used to look after a number of hens for several years and collect their eggs and cook a good many, but although I have seen some curious specimens of twisted and fantastic-shaped shells, and of shell-less eggs, I have not met with one before having two yelks.

I have had the curiosity since to look for information in your columns. In THE LANCET of Sept. 26th, 1885, there is an account of a hen's egg with two shells, one inside the other; and in the issue of Dec. 5th, 1885, a letter describes an egg with two shells, each shell when broken yielding yelk and white; and in that of Oct. 17th, 1885, a correspondent wrote that his medical partner had a similar egg and requested Professor Huxley's opinion on it. "It is very simple," said Huxley, "reversed peristaltic action takes place in the oviduct after the shell is formed; the egg is driven back, and when again descending gets a coating of yelk, albumen, and shell." But I do not see any record of a double yelk mentioned.—I am, Sir, yours faithfully,

Oct. 3rd, 1917. A READER.

A CORRECTION.

To the Editor of THE LANCET.

SIR,—May I correct a statement in your reviewer's extremely considerate remarks upon the last edition of my little book on anæsthetics? Anoci-association is not omitted, as he states, but is briefly described in the pages headed "Nitrous Oxide and Oxygen in Major Surgery." But the word does not occur in the index.

I am, Sir, yours faithfully,

Harley-street, Oct. 2nd, 1917. J. BLOMFIELD.

Medical Diary for the ensuing Week.

SOCIETIES.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY.—8 P.M., Annual General Meeting. 8.30 P.M., Presidential Address:—Sir StClair Thomson: The Founder and Foundation of the Medical Society. Discussion on War Bread and its Effects on Health (introduced by Dr. R. Hutchison and Dr. E. I. Spriggs).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

The following journals, magazines, &c., have been received:—British Journal of Ophthalmology, Philippine Journal of Science, American Journal of Orthopædic Surgery, La Riforma Medica, Surgery, Gynecology, and Obstetrics, American Journal of Obstetrics, Practitioner, London Hospital Gazette, St. Bartholomew's Hospital Journal, American Journal of Surgery.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Capt. A. Anderson; *L'Argus de la Presse*, Paris; Anglo-French Drug Co., Lond.; Lieut.-Col. J. G. Adami, A.D.M.S.; Messrs. Claudius Ash, Sons, and Co., Lond.;

B.—Dr. F. L. Benham, Semaphore; Capt. W. E. Bullock, R.A.M.C.; Basford Rural District, Council, Clerk to the; Messrs. Brown Bros, Lond.; Bolingbroke Hospital, Lond., Sec. of; Messrs. Butterworth and Co. Lond.; British Medical Association (Queensland Branch), Brisbane, Sec. of; Mrs. Barrett, Neston; British Red Cross Hospital, Lond., Commandant of; Messrs. Blinko and Sons, Ramsgate; Sir Thomas Barclay, Birmingham; Mr. T. H. C. Benians, Croydon; Board of Education, Lond., Sec. of; Major W. Broughton-Alcock, R.A.M.C.; Dr. L. W. Bathurst, Lond.; Capt. R. G. Brown, R.A.M.C.; Lieut. Norman Bradley, R.A.M.C.

C.—Mr. B. M. Corner, Lond; Major C. Christy, R.A.M.C.; Mr. W. Clough, Los Angeles; Messrs. Cowie and Co., Lond.; Messrs. J. and A. Churchill, Lond.; Capt. O. Carlyle, R.A.M.C.; Messrs. Callard and Co., Lond.; Cumberland Infirmary, Carlisle, Sec. of; Mr. J. Cabburn, Lond.; Dr. Charles Greene Cumston, Geneva; Dr. A. E. Carver, Torquay; Dr. H. Charles Cameron, Lond.; Capt. J. Campbell, R.A.M.C.

D.—Capt. J. P. Davies, R.A.M.C.; Capt. J. D. Dyson, R.A.M.C.; Messrs. W. Dawson and Sons, Lond.; Mr. J. L. Dick, Lond.; The Decimal Association, Lond.; Dr. V. Dickinson, Lond.; Mrs. H. Davidson, Weston-super-Mare; Dr. M. Davies, Old Colwyn; Mr. H. V. McM. Dillon. Derbyshire Royal Infirmary, Derby, Sec. of.

E.—Mr. P. A. H. Egerton, Leeds; Messrs. Elliott, Son, and Boyton, Lond.; Dr. W. Ettles, Lond.

F.—Dr. R. H. Fox, Lond.; Staff-Surg. P. Fildes, R.N.V.R.; Messrs. H. Frowde and Hodder and Stoughton, Lond.

G.—Sir A. Pearce Gould, Lond.; Mr. H. J. Gauvain, Lond.; Messrs. A. J. Greenly and Co., Lond.; Genatosan, Lond.; G. M. J.

H.—Surg. J. A. Hadfield, R.N.; Prof. R. T. Hewlett, Lond.; Capt. G. S. Hughes, R.A.M.C.(T.); Major F. T. G. Hobday, A.V.C.; Hunterian Society, Lond.; Mr. J. T. Henderson, Pietermaritzburg; Dr. W. J. Howarth, Lond.; Dr. G. D. Henderson, Holyoke; Hospital Saturday Fund, Lond.; Messrs. W. and R. Holmes, Glasgow; Dr. G. Hunter, Edinburgh; Miss Holloway, Nice; Holborn Advertising Service, Lond.; Mr. T. O. Hunter, Arequipa.

I.—Ilford Urban District Council; Incorporated Society of Trained Masseuses, Lond.; Sec. of.

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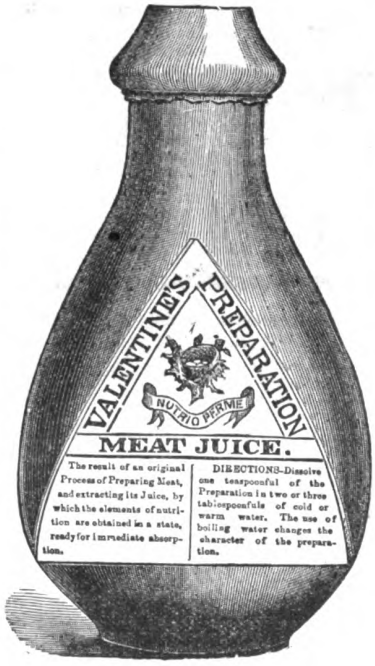
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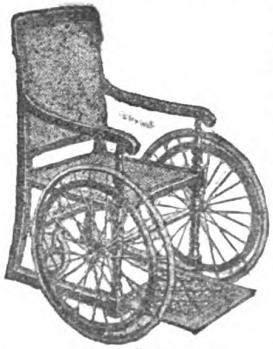
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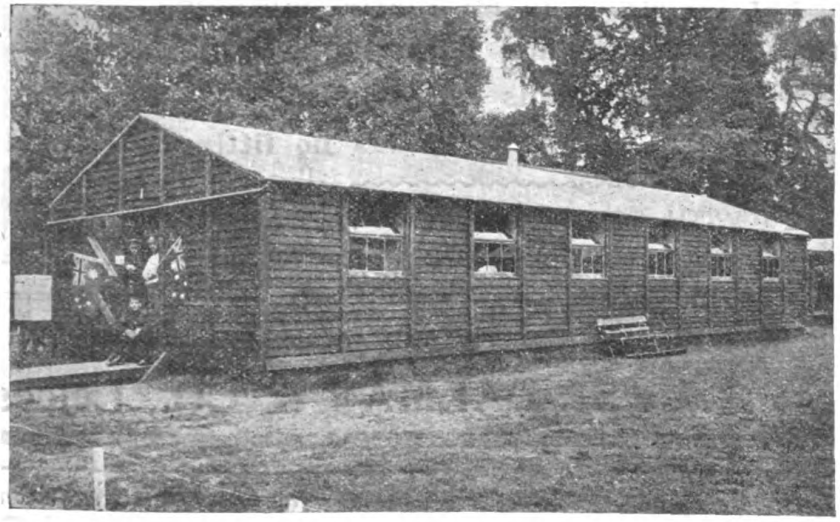
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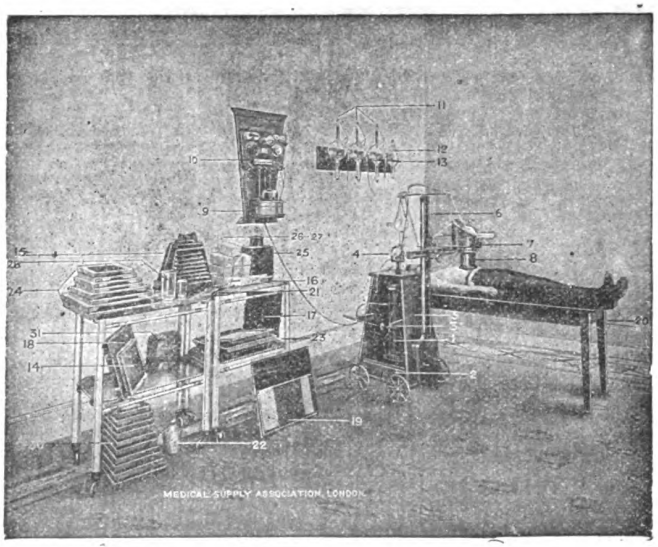
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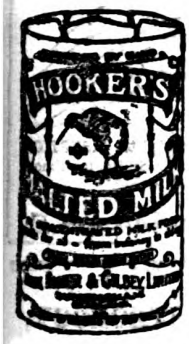
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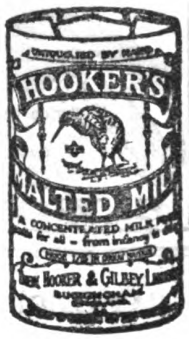
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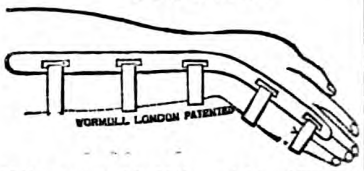
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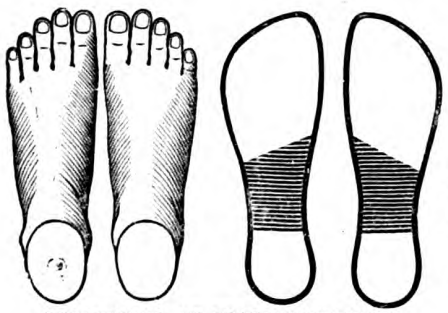
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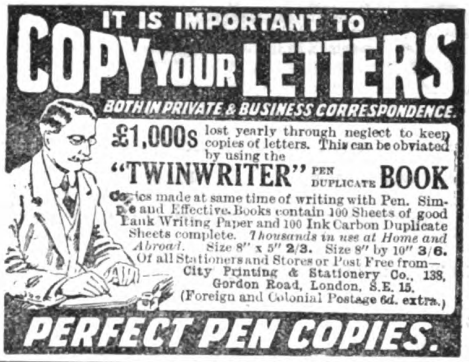
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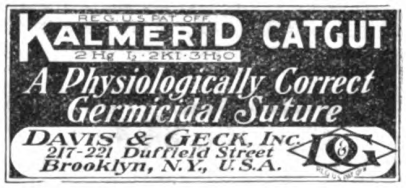
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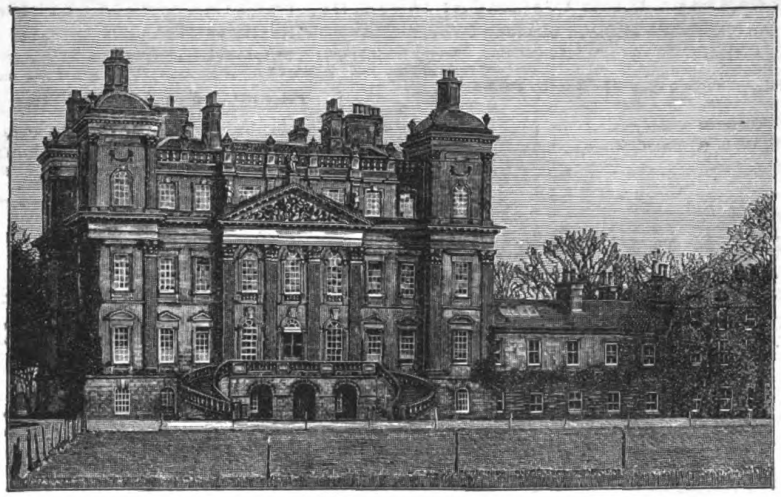
References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

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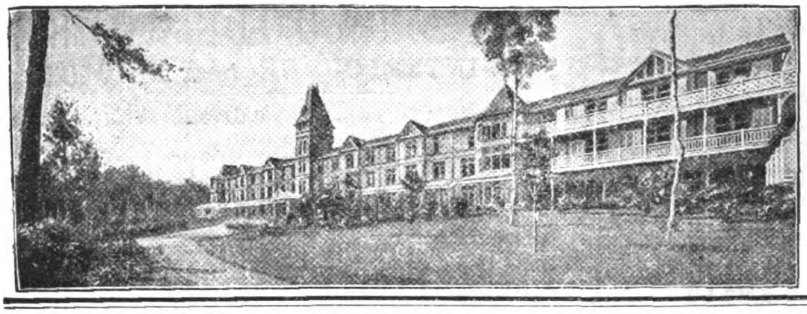
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For particulars apply to F. KINCAID ETLINGER, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire.

Telegrams: SANATORIUM, MATLOCK. Telephone: MATLOCK 22.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 45, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

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MATLOCK. Established 1853.

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Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes. Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

Backward, Delicate, Invalid Children (not Mental).—Home Nursing, Education. Trained Nurses, Day and night. Large grounds, games, &c. Good cooking. Massage. Medical references Twenty-five years' experience.—Principal, Woodfield, Streatham, S.W. 16.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: HAYNES, Brentwood 45.

Lady (South Coast) desires care of INFANT, legitimate or otherwise. Very good home. Good premium required if entire surrender. References permitted to Dr. H. O. Butler, 81, Sutton Court-road, Chiswick, W. 4.—Address, Miss Wrightson, Lynfield, Court-road, Eltham, S.E. 9

Borough Hospital, Birkenhead.—Wanted, JUNIOR HOUSE SURGEON. Must be fully qualified. Salary £175, board, and laundry. Duties include casualties and anæsthetics.—Applications, with testimonials, to be sent to the Secretary.

Free Eye Hospital, Southampton.—Wanted, HOUSE SURGEON (Male or Female). Must have some knowledge of Eye work. Salary £100 a year, with board, lodging, and laundry. State when disengaged. Apply to E. T. KEMP, Secretary (pro tem.).

Royal South Hants and Southampton HOSPITAL.—Required, a HOUSE PHYSICIAN. Qualified candidates or Senior Students may apply. Particulars on application to Secretary.

Medical Officer (Male or Female), qualified, wanted for Lower District of COLMONELL PARISH Salary £70 per annum, exclusive of medicines. Vaccination salary £2 per annum. Good Private and Panel Practice Must reside in village. Applications, with one copy of testimonials, to be lodged with A. LEES, Inspector, Colmonell, Ayrshire, on or before 10th October.

Oldham Royal Infirmary (200 beds, 75 military).—Wanted, THIRD HOUSE SURGEON, Male (ineligible); duties to commence Oct. 23rd. Salary £225 per annum, with board, residence, and laundry. Applications with testimonials to be sent to the undersigned.

EDWIN LIONEL BEAKE, Supt. and Secty.

Charing Cross Hospital. — The appointment of MEDICAL REGISTRAR is vacant. Salary £60 per annum, with lunch and tea. Candidates (men or women), who must be qualified to practise under the Medical Registration Act, should apply to the undersigned, enclosing copies of not more than three testimonials, not later than October 15th.

1st Oct., 1917. WALTER ALVEY, Secretary.

Walsall and District Hospital.—The Committee invite applications from ladies for the post of ASSISTANT HOUSE SURGEON and ANÆSTHETIST, which will shortly become vacant. Salary £175 per annum, with board, residence, and laundry.

Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, to the undersigned.

WALTER FRANCOMBE, Secretary.

Salisbury General Infirmary (200 beds).—Wanted, a HOUSE SURGEON, Male or Female. Salary £150 per annum, with apartments, board, lodging, and washing.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

All applications, with testimonials, to be sent to the undersigned, of whom the rules relative to the duties may be had on application.

The duties may commence from the date of the appointment.

Dated 17th Sept., 1917. S. B. SMITH, Secretary.

Bolingbroke Hospital (Incorporated), Wandsworth Common, S.W.—RESIDENT MEDICAL OFFICER and HOUSE SURGEON required, Male or Female. Appointments for six months or one year. Opportunities for experience in Operative Surgery. Salary of former £200 per annum, with board-residence and laundry, and of latter £150 per annum, with board-residence and laundry.

Applications, with not less than three testimonials, to be sent in not later than Monday, 15th inst., to the Secretary, Bolingbroke Hospital, Wandsworth Common, S.W. 11.

The Royal Infirmary, Sheffield (363 beds).—Wanted, a CASUALTY OFFICER. Salary £150 per annum with board and residence. The duties of the Officer to be elected will include work in the In- and Out-Patient Departments under the supervision of the Honorary Medical Staff.

The post is an important one and is tenable for six months.

Applications, which are invited from persons who must be fully qualified, should be sent to the Secretary immediately, stating age, qualifications, and any previous experience.

By order.

Board Room. JNO. W. BARNES, Secretary.

Oxford Eye Hospital.—Wanted, a

RESIDENT HOUSE SURGEON, Man or Woman. Applications, with testimonials, should be addressed to the Acting Hon. Secretary.

Addenbrooke's Hospital, Cambridge.

—Required at once:—1. A HOUSE SURGEON.
2. A HOUSE PHYSICIAN.

Salary in both cases at the rate of £300 per annum, with board, residence, and laundry.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

Applications, stating age, qualifications, experience, &c., accompanied by copies of not more than four recent testimonials, to be sent to the undersigned as soon as possible.

24th Sept., 1917. RICHARD J. COLES, Secretary-Superintendent.

West Bromwich District Hospital

(105 beds).—Wanted, a SENIOR HOUSE SURGEON.

Salary £160 per annum, with board, residence, and washing.

Candidates must be unmarried, doubly qualified, and duly registered.

Applications, stating age, qualifications, with copies of testimonials, to be sent to the Honorary Secretary, T. FOLEY BACHE, Esq., J.P., Lombard House, West Bromwich.

Canvassing the members of the Board will be deemed a disqualification. By order of the Board.

FRANK I. HANCOCK, Secretary.

District Hospital, West Bromwich, Sept. 11th, 1917.

Bury Infirmary.—Wanted, a Junior

HOUSE SURGEON (ineligible for Military Service), who must have both Medical and Surgical qualifications. Salary £150 per annum, with board, residence, and washing. Among other duties the person appointed will have charge of the Children's Ward, the Ophthalmic Department, Casualty and Out-Patients' Departments, and the administration of Anæsthetics. Terms of appointment not exceeding nine months, then eligible for the Senior House Surgeon's post if suitable.

Applications, stating age and nationality, with testimonials and photograph, to be sent at once to the Honorary Secretary, Infirmary, Bury, Lancashire.

RESIDENT HOUSE SURGEON.

Applications are invited for the post

of Resident House Surgeon.

Candidates should be doubly qualified and registered.

Applications should be accompanied by copies of not less than three recent testimonials.

Salary £100, with board, lodging, and washing.

Address, the Secretary,
ROYAL NATIONAL ORTHOPÆDIC HOSPITAL,
234, Great Portland-street, W. 1.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Appointment of Medical Officer of

HEALTH.—The Whitehaven Town Council and Rural District Council invite applications for the appointment of a Medical Officer of Health, to act within their respective Districts at a total inclusive salary of £500 per annum.

The person appointed will be required to undertake any duties which may properly be assigned to a Medical Officer whether these be imposed by law on the Authorities concerned or voluntarily undertaken by them. His duties will include the medical inspection of School Children within the Borough.

He will not be allowed to engage in private practice.

The proposed appointments will be open to members of the medical profession now serving with the Forces for the period of the War, and in the event of the appointment of one in this position whose services cannot be dispensed with by the Military Authorities, arrangements will be made for the discharge of the duties until the conclusion of the war.

Applications, endorsed "Medical Officer," will be received by the Town Clerk, Whitehaven, up to Saturday, the 3rd November next.

By order.
THOS. BROWN, Town Clerk.
E. R. CROASDELL, Clerk to Rural District Council.

Whitehaven, September, 1917.

Portsmouth Borough Mental Hospital.

LOCUM TENENS (Male or Female) ASSISTANT MEDICAL OFFICER required at once. Salary 7 guineas per week, with apartments, board, and laundry.—Apply, Medical Superintendent, Portsmouth Borough Mental Hospital, Portsmouth.

Lady House Surgeon required for the

NOTTINGHAM and MIDLAND EYE INFIRMARY. Previous experience of Ophthalmic work not essential; exceptional opportunity of acquiring same. Salary £200 to £250, according to experience and qualifications with board, residence, &c. Full particulars to Secretary, Mr. GEO. M. MOORE, 7, Parliament-street, Nottingham.

Liverpool Infirmary for Children.—

There are vacancies for Two RESIDENT HOUSE PHYSICIANS, Gentlemen (ineligible for Military Service) or Ladies.

The appointments will be for a period of six months. Salary in each case at the rate of £90 per annum, with board and lodging.

Applications, with recent testimonials (copies), to be sent to the Hon. Secretary, Children's Infirmary, Myrtle-street, Liverpool.

Derbyshire Royal Infirmary, Derby

(367 beds, 170 Military).—RESIDENT SURGICAL OFFICER required. It is essential that he should be a competent surgeon and ineligible for Military Service. It is desirable that he should have knowledge of Ophthalmic, Ear, Throat and Nose, and X-Ray work. A liberal salary will be paid to a suitable applicant. Application, with copies of three testimonials, to be received by 20th October.

EDMUND FORSTER, Superintendent.

Walsall Education Committee.—

SCHOOL MEDICAL INSPECTION.—The above Committee require immediately the services of a qualified Medical Man or Woman for Temporary duty during the absence of their School Medical Inspector on War Service. Salary will be at the rate of £400 per annum, and it is highly desirable that the officer appointed should take up duty at an early date.

W. SCARLETT, Acting Secretary.

Education Offices, Council House, Walsall, 2nd October, 1917.

The Prince of Wales's General Hos-

PITAL, Tottenham, N. 15. — Applications are invited for the post of SENIOR HOUSE SURGEON at the above Hospital.

Salary at the rate of 7 guineas per week, with residence, board, and laundry.

Candidates must possess the double qualification, and applications, with copies of three testimonials, to be sent to me on or before Monday, 15th October.

2nd October, 1917. FREDERICK W. DREWETT, Director.

Queen's Hospital for Children,

Hackney-road, Bethnal Green, E. 2. — Resident Medical Posts will fall vacant as follows:—

HOUSE PHYSICIAN, 17th January.
CASUALTY HOUSE SURGEON, 1st January.
HOUSE SURGEON, 1st January.

Six months' appointments. Salary £100 per annum, with board, residence, and washing.

Candidates should be doubly qualified, but applications from Fifth year Students will be entertained. T. GLENTON-KERR, Secretary.

1st Oct., 1917. Telephone: Dalston 305.

Kensington Board of Guardians.—

MEDICAL SUPERINTENDENT (Resident). — The Guardians require the services of a Medical Superintendent for their Institutions in the Marloes-road, at a salary of £650 per annum, with the use of the Medical Superintendent's house and furniture, coals, gas, electric light, and washing; such remuneration to include payment for vaccinations and the examining and certifying of lunatics. The appointment will be made for a period of one year subject to three months' notice being given on either side to determine the appointment.

Candidates must possess both a Medical and Surgical qualification, and be ineligible for the Army or Navy. The Doctor appointed will be required to devote his whole time to the duties of the office.

Forms of application can be obtained from the Clerk to the Board, Guardians' Offices, Marloes-road, Kensington, W. 8.

Metropolitan Borough of Bethnal

GREEN. — LADY ASSISTANT MEDICAL OFFICER OF HEALTH.—The Council invite applications for the appointment of a Lady Medical Practitioner as Assistant Medical Officer of Health (whole-time) primarily for the purposes of a Maternity and Child Welfare Scheme, at a salary of £400 per annum.

Candidates must be registered Medical Practitioners. Preference will be given to those holding a Public Health Diploma, but this qualification is not essential.

The appointment will be temporary, terminable at three months notice on either side.

Candidates must have had special experience in connexion with Maternity and Child Welfare work.

Applications, on forms which contain further particulars, to be obtained from the Medical Officer of Health, Town Hall, Bethnal Green, E. 2, accompanied by copies of not more than three recent testimonials, one at least bearing upon the candidate's experience in Maternity and Child Welfare work and organising ability, must reach me not later than noon on Wednesday, the 17th day of October, 1917, endorsed "Assistant M.O.H."

Canvassing, direct or indirect, will disqualify a candidate.

Town Hall, Bethnal Green, E. 2. DAVID J. KEAP, Town Clerk.

London Temperance Hospital, Hampstead-road, N.W. 1.—Applications are invited for the following post, which will be vacant on the 20th inst:—ASSISTANT RESIDENT MEDICAL OFFICER. Honorarium £120 per annum, with residence, board, &c.

Applications, with testimonials, should be addressed to the Secretary.

New Hospital for Women, Euston-road.—Wanted, Medical Woman for the post of RESIDENT MEDICAL OFFICER at the House of Recovery, New Barnet. Salary £60 a year, with board, residence, and laundry. Applications, with testimonials, should be sent immediately to the Secretary of the New Hospital. IMOGEN H. MURPHY, Secretary.

Nottingham General Hospital.—Wanted, a HOUSE SURGEON (Medical Woman). She will be appointed for six months. Duties to commence on the 1st of November, 1917. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 11th of October. By order.

E. M. KEELY, Secretary.

Hampshire County Council.—ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.—The Hampshire County Council propose to appoint a Temporary Assistant County Medical Officer of Health for the period of the War, and invite applications from fully-qualified Medical Men or Women. Possession of a Diploma or Degree in Public Health will be considered an advantage. Salary £400, in addition to travelling allowances.

Applications, with copies of not more than three testimonials, upon a form which, with the conditions of appointment, may be obtained from the undersigned, must be delivered at The Castle, Winchester, on or before Monday, the 22nd October, 1917.

The canvassing of members of the County Council or any committee personally or otherwise, is strictly prohibited and will disqualify.

H. BARBER, Clerk of the County Council.

The Castle, Winchester, 3rd October, 1917.

Wanted, a Temporary Matron for a Shell Shock Hostel. Salary £100, all found.—Address, No. 508, THE LANCET Office, 423, Strand, W.C. 2.

Sister wanted at the British Home and HOSPITAL for INCURABLES (Military Auxiliary Hospital), Streatham, S.W. 16. Salary £50 with indoor uniform. Apply Matron.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 393 Gerrard.

Locum Tenens wanted at once (ineligible for Military Service). Must have good references.—Apply (personally if possible), Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Locum Tenency desired by middle-aged Practitioner who has just disposed of his practice. No midwifery attended. Abstainer. Plain feeder. Does not cycle, but good walker. Terms 4 guineas and third-class return fare.—Medical, 14, Burnbury-road, London, S.W. 12.

Part-time Work.—Lady Doctor, with several years' hospital experience, desires Morning or Evening Work, or both, in London. (Also one or two free afternoons a week). Would take private work or non resident post in hospital.—Address, No. 511, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens Provided

at ONE Hour's Notice.

APPLY

ARNOLD & SONS

(J. E. ARNOLD, E. R. ARNOLD),

Surgical Instrument Manufacturers,

TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C. 1.

Telegrams: "Instruments, London." Telephone: 5240 City.

Layman with knowledge of Radiography and Electro-Medical work offers Part-time, without payment, to a War hospital or similar institution in London district.—Reply, G211, Deacon's, 7, Leadenhall-street, E.C. 3.

Lady Dispenser (Hall) would like position with Doctor in West of England. Previous experience and references.—Address, No. 512, THE LANCET Office, 423, Strand, W.C. 2.

Lady, educated, requires position as PRIVATE SECRETARY. Stenographer, good Correspondent, &c. Highest testimonials.—Apply, G., 82, Chester-square, S.W. 1.

Partner wanted Country Town Practice in Norfolk. Receipts average over £1700. Work pleasant, easy, with scope for increase.—Apply, M.B., care of Messrs. H. H. Butler & Son, 93, Humberstone-gate, Leicester.

£4000.—Wanted, Third Partner for Practice in a busy Midland Hospital Town. Receipts well over £4000. Valuable appointments held.—Address, No. 507, THE LANCET Office, 423, Strand, W.C. 2.

Nominal Partner wanted. £350 and house; necessary rooms furnished. Vacancy November. Permanency or War Locum. General practice. Branch Surgery. Suit married man.—Dr. Packman, Rochester.

Partner wanted in good-class General Practice in favourite outlying S.W. Suburb. Income nearly £3000 a year. Fees average 5s. Very little Midwifery. Fees from £3 3s. upwards. Choice of houses. Quarter Share to begin. Half Share and Succession later. No panel taken.—Apply, No. 6180, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Wanted, Panel Practice in London of not less than 2000.—Send full details, in confidence, to Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

To Sanatorium Proprietors.—Wanted to purchase a share in a PRIVATE SANATORIUM by a medical man with considerable experience of Tuberculosis.—Address, No. 510, THE LANCET Office, 423, Strand, W.C. 2.

Wanted at once, Cash and Panel PRACTICE in or near London. Principal now free to negotiate.—Send full details, in confidence, to Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

For Disposal, Practices or Partnerships —Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Over £800 a year.—Hospital Town, within 100 miles.—Panel nearly 1000. Good corner house in Residential district. Fees from 2s. 6d. upwards. Great scope. Partnership introduction long as desired. Personally visited and investigated. Premium about £700.—Apply, No. 6183, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

London, W. — A Non-Dispensing PRACTICE, situated in a good district, and producing well over £1000 per annum. Fees 5s. upwards.—For full particulars, apply to Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

North Wales Coast.—Over £400 a year, formerly larger. Residential locality on rail. Fees 2s. 6d. to 21s. Good house; rent £40. Easily worked. Hunting, fishing, &c. Premium about one year's purchase.—Apply, No. 6196, care of Mr. Percival Turner, 4, Adam street, Strand, W.C. 2.

Bucks.—A General Practice, situated in a charming district and producing about £750 per annum. Fees 2s. 6d. to 10s. Midwifery 2 guineas upwards. Panel list 450. Ample scope for increase. Premium for quick sale £250.—Quote Folio 990, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Country Practice.—£500 a year, great scope, near good Town in Lincolnshire. Panel £200. Large house and garden. Fruit-growing district. Vendor retiring. Price only £275. —Apply, No. 6171, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Thirty-six years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C.2. Telephone: 399 Gerrard. Telegrams: Ipsomian, London.

Kent.—An old-established General PRACTICE, situated in a large Country Town. Receipts 1916 over £1400. Panel 1200. Fees 1s. 6d. upwards. Several small appointments held. Rent of house £55 per annum.—Quote Folio 1006, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with thirty-six years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are Sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

Norfolk.—A very old-established General PRACTICE, situated in a hunting district and producing over £1250 per annum. Panel list 950. Several small appointments held. Fair size house, containing six bedrooms, &c. Rent £40 per annum. Premium one year's purchase.—Quote Folio 962, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

£1100 a year.—Easy terms.—London suburbs. Same hands nearly fifty years. Great scope. No panel taken. Fees 1s. 6d. to 7s. 6d. Large house and garden, tennis lawn, &c. Premium one year's income; part down, balance by instalments.—Apply, No. 6186, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Berks.—An old-established General PRACTICE, situated in a good country district, and producing about £650 per annum. Panel list 470. Fees 2s. 6d. to 12s. 6d. Excellent house, containing four bedrooms, &c. Very large garden. Rent £56 per annum. Premium three-quarters of a year's purchase.—Quote Folio 989, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

Urgent Sale.—Easy Terms.—Within 100 miles.—Unopposed Country PRACTICE of £450 a year and scope. Vendor selling through illness. Appointments and panel worth £250. Good detached house, large garden, tennis lawn, orchard, &c.; rent £40. Sandy soil. Easily worked. Rail close. Premium £400, part by instalments.—Apply, No. 6127, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

S. Coast.—A General Practice, situated in a charming Seaside resort, and producing about £700 per annum. Panel list 900. Fees 2s. upwards. Midwifery 30s. upwards. Excellent house, small garden, &c.; rent £75 per annum. Premium one year's purchase or near reasonable offer. — Quote Folio 756, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

Excellent opportunity offers for acquiring ONE-THIRD SHARE in old-established Partnership Practice in North London district, within easy access of the City and West-End. Receipts £2400. One year's purchase would be accepted for speedy sale. Excellent house with good garden; rent £70.—Address, No. 505, THE LANCET Office, 423, Strand, W.C. 2.

Herts.—A General Practice, situated in a good district and producing about £700 per annum. Panel list 1200. Fees 2s. 6d. upwards. Excellent semi-detached house, containing five bedrooms, &c.; rent £42 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 987, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

London, E.C.—An old-established Cash and Panel PRACTICE, situated in a thickly populated district, and producing over £900 per annum. Panel list 1700. Fees 1s. 6d. upwards. Small appointment held value £60 per annum. Excellent house with a ¼ acre of garden; rent £58 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 751, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

West of England.—An old-established PRACTICE, situated in a thickly populated part of a large City. Receipts over £1240 per annum. Panel list over 1000. Appointment held worth £100 per annum. Fees up to 7s. 6d. Small house, situated in a busy thoroughfare; rent £50 per annum. Premium £800, payable part down and the balance by arrangement.—Quote Folio 924, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

£1000 a year.— Very Urgent.— Within an hour of London. Town of 40,000. No panel. Parish, &c., over £200 a year. Fees 2s. to 3s. 6d. Midwifery: none under £3 3s. Small house, with garden; rent £40. Illness cause of sale. Price about one year's purchase, part by instalments.—Apply, No. 6199, care of Mr Percival Turner, 4, Adam-street, Adelphi, W.C.2.

Belgravia.—For Disposal, the valuable LEASE of PREMISES where a high-class Practice of nearly £3000 a year has been carried on for many years. — Apply, in first instance, to 6179, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Park-street, Grosvenor-square. — A well-furnished CONSULTING ROOM to Let with Use of Waiting Room in house of Professional man. Rent only £200 per annum, including lighting, heating, and attendance.

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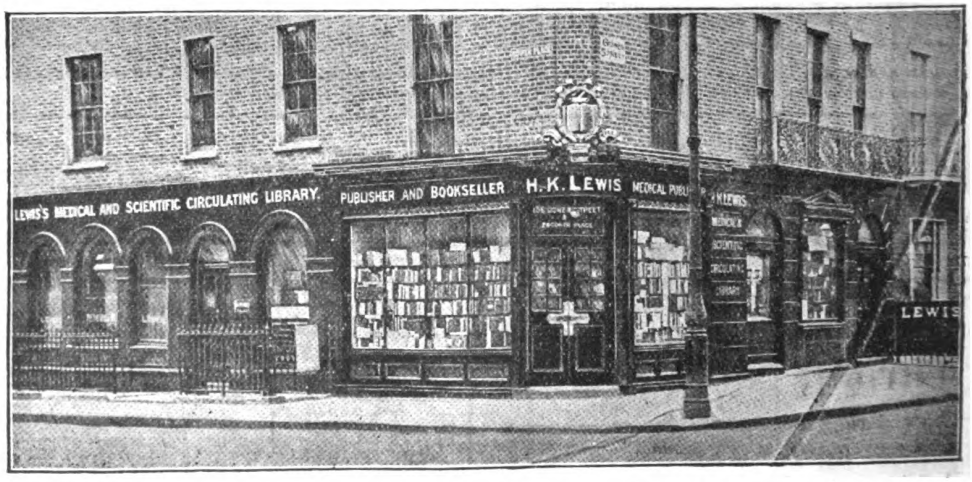
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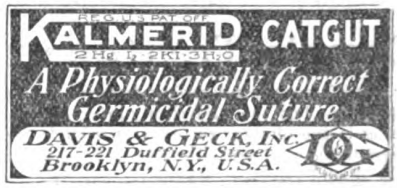
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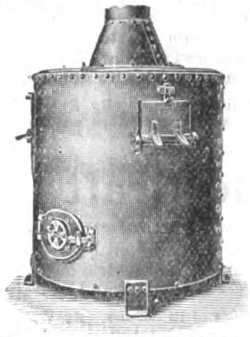
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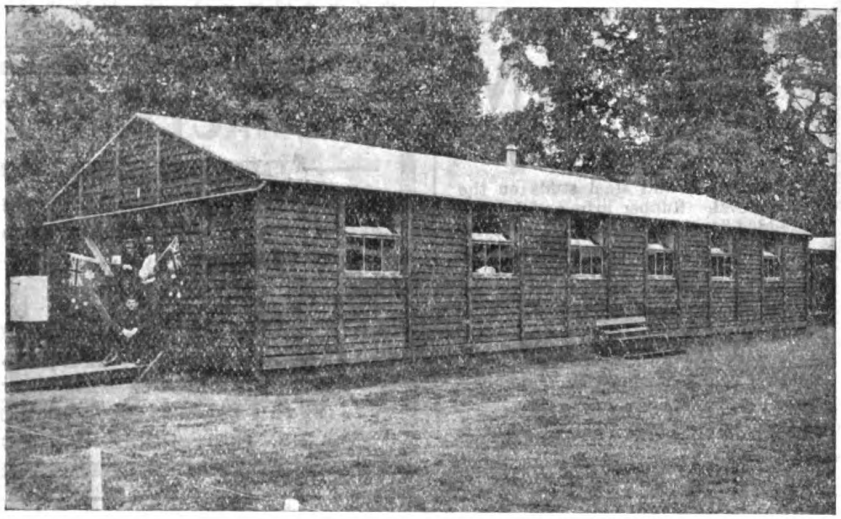
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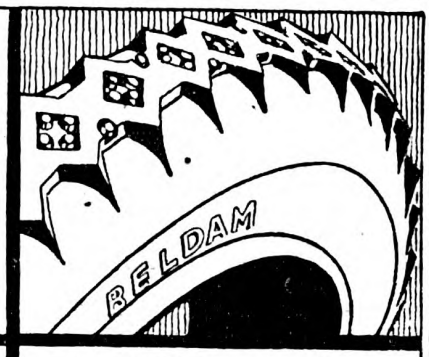
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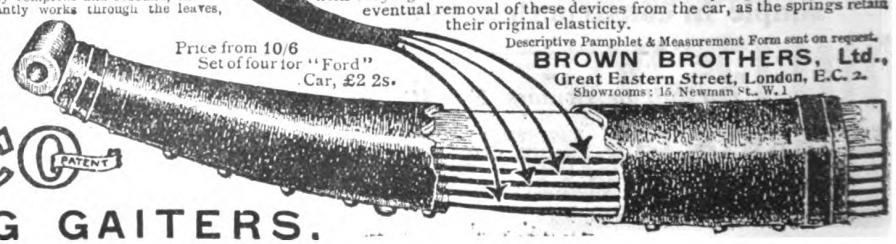
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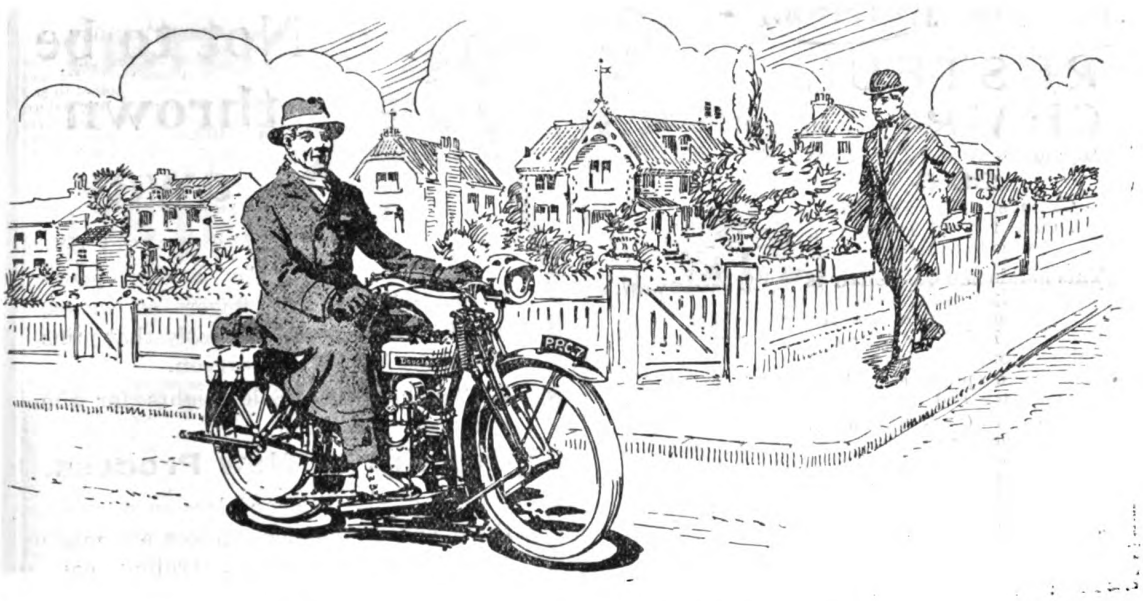
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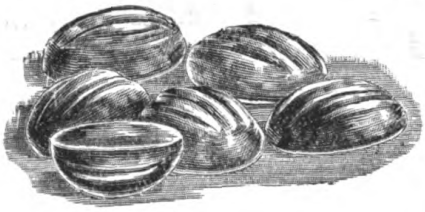
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Report

UPON

AN INVESTIGATION INTO THE EFFECTS OF COLD UPON THE BODY.*

By NORMAN C. LAKE, M.D., M.S., D.Sc.Lond., F.R.C.S. Eng.,

ASSISTANT SURGEON, QUEEN'S HOSPITAL FOR CHILDREN; TEMPORARY CAPTAIN, R.A.M.C.

During investigations into the growth of tissues *in vitro* upon the lines of Carrel's[1] well-known work it became necessary to investigate the effects of temperature changes. In particular the effect of cold upon the tissues was studied, and, as will be seen from the experiments detailed, led to the conclusion that cold, down to −6° C., brought about a state of suspended animation in which for considerable periods the tissue could be preserved intact and its potential vitality maintained at the normal standard. This rather heterodox conclusion necessitated a re-investigation of "frost-bite," for if the effect of "chilling" of the tissues is to produce a state of suspended animation, then it will be illogical to accept theories which assume a direct effect of a degenerative and destructive nature. The term "frost-bite" is here used in its widest sense, and includes such conditions as "trench foot." Later on we shall attempt to separate these into two entities having as their basis different pathological processes.

In the more recent of the writings upon the subject the pathology of the condition has been explained in various ways. Lorrain Smith, Ritchie and Dawson,[2] after a series of very excellent investigations both from the clinical and experimental points of view, came to the conclusion that the pathology of "trench foot" was the same as that of true frost-bite, although of much less intensity, and that both are primarily due to the direct effect of cold upon the tissues, although other factors, such as pressure, had a determining effect. Many other writers agree with them. In several recent articles, written chiefly from the clinical standpoint, it has been suggested that vaso-motor disturbances play an important part; these, again, may be divided up into many smaller groups. Some explain the effects by assuming a lack of oxygen to the part, others by lack of nutritive plasma, and others again by special effects upon the endothelium of the vessel walls. That other factors than cold play a part in the production of "trench foot" is undoubted, but in all probability these factors must be considered as secondary and entirely subsidiary to the temperature variation. Rideal and Waller[3] have, for instance, investigated the effects of water and saline solutions upon the feet, but failed in any of their experiments to produce conditions which resembled "trench foot," and it is doubtful whether the slight disturbances of sensibility which they produced in any way correspond to the paræsthesiæ which occur when the additional factor of cold is brought into play. These questions will be dealt with, however, more fully later on.

In considering the pathology of frost-bite, it is logical, at least, to say that the effects are either purely local or the reflex, with the possible combination of both, and an endeavour has been made to bear this constantly in mind.

The details of the work which follow are divided up into the groups of experiments:—

1. Investigation into the effects of cold upon the individual tissues when detached from all extraneous influences, whether of the circulatory or nervous system; such tissues may conveniently be called isolated tissues.
2. Investigation into the effects of cold upon the blood.
3. Investigation into the effects of cold upon the tissues in normal relationship to the circulatory and nervous systems.
4. Investigation into the effects of cold upon the tissues in abnormal relationship to the circulatory and nervous systems.
5. Finally, the conclusions drawn from these investigations both with regard to pathology and treatment.

* Research conducted under a grant from the Medical Research Committee at the Pathological Laboratories, Charing Cross Hospital Medical School. Thesis accepted for the degree of D.Sc. Lond.

No. 4911

(1) *Investigation into the Effects of Cold upon the Individual Tissues when Isolated.*

The method of growing tissues *in vitro* devised by Burrows[4] and improved by Carrel[5] lends itself very excellently to this work. It consists, in brief, of explanting small portions of tissue into media, the chief basis of which is plasma. The portion of tissue used is small and, having been placed on a coverslip, is surrounded by the medium, and when this is coagulated or set the whole is inverted on to a celled slide, sealed with paraffin, and incubated to 37·5° C. After a varying number of days the tissue can, if necessary, be transplanted into fresh medium, after washing in Ringer solution, and in this way kept alive and actively growing for an indefinite period. If these growths are not transplanted they sooner or later die from the accumulation of products of metabolism in the media. The effects of cold may be investigated either by exposing the tissue *en masse* before explantation or by placing the slide with the explanted growing tissue into the required temperature.

In all between 500 and 600 experiments have been made in which the tissue has been exposed for some period to a greater or less degree of cold, and the individual experiments quoted here have been repeated several times, in some cases over 100 times, with practically constant results. The tissues used were obtained from rabbits, mice, frogs, and in many cases from human beings during operations.

Practically every tissue in the body has been explanted, including heart, endothelium, connective tissue, skin, thymus, thyroid, kidney, liver, spleen, testicle, ovary, brain, nerve, pituitary, bone, mucosa, pancreas, &c. The media used included Ringer's solution, Ringer's solution and agar, serum and serum agar, plasma, hypotonic plasma, and plasma with the addition of various glandular and other extracts. As far as the effects of cold go, however, the medium appears to make very little difference, and so for the most part hypotonic plasma was used in order to make the growths uniform. Homologous plasma was generally used, but occasionally heterologous plasma (e.g., rabbit tissue on human plasma, &c.).

The criteria of activity in these explants may be divided into two main divisions—namely, growth and function. Growth is very easily observed and often exceedingly vigorous, function is much more difficult to test; in the case of the embryo and young adult heart, however, pulsation of the small explanted piece occurs with a fair degree of regularity and forms a delicate and easily observed test of functional activity. For this reason the great majority of the growths used for this research were young or embryo heart tissues. The staining of the surrounding medium by the excreted bile may be used as a test of activity in the liver growths, although this is rather crude, and hence has only been used occasionally. The functional activity of other tissues, and particularly of nerve tissues, it is almost impossible to test in these growths, and in this case the exact morphological reproduction of the tissue cells may be fairly logically taken to imply that such tissues are functionally active. It may be argued that this jump from vegetative to functional activity is not justified, and that the two are quite separate entities. Against this is the fact that among hundreds of heart growths it has been observed that there is a close relationship between the two; the more vigorous the growth the more active the pulsation. A heart growth pulsating but not growing (functionally but not vegetatively active) was not observed among the whole series.

The experiments in this group may be divided up as follows:—

(*a*) In which the tissue *en masse* was stored in Ringer's solution at low temperatures. Portions of the tissue were then explanted and incubated.

(1) Stored at temperature of + 2° C. (in ice chest) for 48 hours and then "cultured." In practically all these cases growth, rather more vigorous than that in the controls which were immediately explanted, took place.

Typical example.—March 2nd, 1916. Rabbit embryo (14 days) placed in Ringer and stored at + 2° C. March 4th: Portion of heart explanted into medium of rabbit plasma (No. 448). March 6th: Vigorous pulsation and extensive growth—transplanted. March 7th: Pulsation continues, fresh growth actively occurring.

(2) Stored at temperature of + 2° C. for 7 days and then cultured.

May 31st: Rabbit embryo (10 days) placed in Ringer and stored at + 2° C. June 6th: Skin explanted into medium of hypotonic rabbit plasma (No. 974). June 8th: Extensive growth of fibroblastic and epithelial cells.

(3) Stored at temperature of −10° C. for 30 minutes and then cultured (May 13th) in hypotonic plasma (859). May 17th: No growth observed.

From this series of experiments the conclusion may be drawn that tissues may be stored at a temperature of + 2° C. for periods up to at

least 7 days without losing any of their vitality, either functional or vegetative, and, indeed, in some cases appear to have increased in vitality over the controls which were explanted immediately. At the same time, temperatures as low as −10° C. kill the tissues within 30 minutes.

(*b*) Actively growing tissue in explants exposed to varying degree of cold for certain periods of time and then incubated again.

(1) Stored at temperature of +2° C.

March 9th: Small portion of fresh human thyroid (removed at operation) explanted into human plasma. March 10th: Some liquefaction of medium had occurred; placed in ice chest for 24 hours and again incubated. March 13th: Fairly extensive growth of epithelial cells.

(Liquefaction is common in human growths, and there is usually over 24 hours latent period before growth starts.)

(2) Stored at temperature of +2° C. for 16 days.

April 24th: Rabbit embryo heart stored at +2° C. in Ringer for 24 hours, then explanted in hypotonic plasma. April 26th: Active growth and pulsation. Placed in ice chest for 16 days; incubated again; within 2 hours vigorous pulsation was occurring and later active new growth was noted which continued for several transplants.

(3) Stored at temperature of −5° C. for 30 minutes.

April 24th: Rabbit embryo heart stored at +2° C. in Ringer for 24 hours, then explanted into hypotonic rabbit plasma. April 26th: Vigorous pulsation and extensive growth. Kept on ice and salt at −5° C. for 30 minutes. Incubated again. As soon as temperature reached +30° C. pulsation started and growth went on in further transplants for several generations.

(4) Stored at temperature of −7° C. for 30 minutes.

May 5th: Rabbit embryo heart stored at +2° C. in Ringer for 24 hours, then explanted into hypotonic plasma. May 7th: Vigorous pulsation and active growth. Placed on ice and salt at −7° C. for 30 minutes the plasma froze into an opaque solid material at this temperature. On incubating the fibrin net-work was completely broken up and the medium liquefied; the new grown cells were expanded into circular form, much vacuolated, and rapidly broke up altogether. Pulsation stopped, and although the tissue was transplanted several times no further growth or pulsation occurred.

This experiment repeated with temperatures down to −18° C. gave the same result.

It is necessary here to interpose some further observations upon this last series of experiments. We have already drawn attention to the fact that these growths, if not transplanted, eventually die of toxæmia from accumulation of metabolic products. The onset of this condition can be readily observed. In the first place, the growth becomes much slower and pulsation less active; in the second place, the newly grown cells become circular and much vacuolated. In these particular experiments the controls began to exhibit this condition in about five days and transplantation became necessary. It will be noted that in the chilled specimens growth had already been occurring for two days before they were placed in the ice chest, and upon re-incubating special care was taken to look for the onset of vacuolation in the cells. Contrary to expectation, this did not occur on the third day, but on the fifth or sixth day. The explanation is probably that the metabolic products had diffused during the condition of suspended animation from the immediate proximity of the growth and so had become diluted. The further significance of this observation will be noted later.

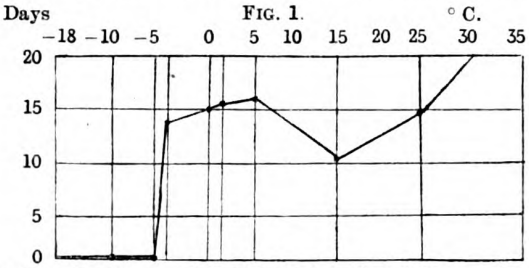


Chart showing the approximate periods of survival of tissues preserved at temperatures between −18° C. and +37° C.

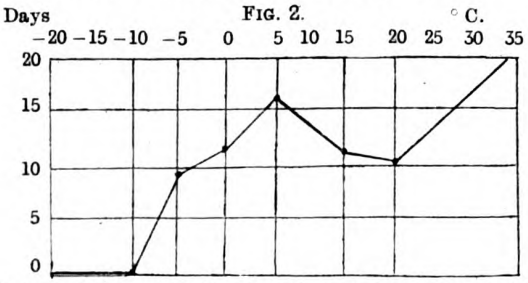


Chart showing approximate periods of survival of embryonic chick tissues at temperatures between −20° C. and +33° C. (R. Lambert).

In this first series of experiments upon isolated tissues results were obtained which may be represented graphically. (Fig. 1.) The curve has been charted from the general results obtained upon rabbit tissues and does not pretend to any very great accuracy. Its general form is, however, correct, and it agrees so closely to the curve given by R. Lambert[6] for chick and rat tissues that it may be taken as approximating to accuracy. (Fig. 2.) The main characteristics of both these curves are the sudden drop in the region of − 6° C. and the dip in the curve at +14°–16° C. The deductions to be drawn from these curves will appear in the last section.

(2) *Effects of Cold upon the Blood.*

In Da Costa's "Surgery," in the section on Frost-bite, appears the statement that definite changes occur in the blood in the nature of cellular degenerations, &c.

It remains to be seen whether the changes occurring in isolated blood *in vitro* corresponded to those occurring in the other tissues of the body. If the cellular contents of the blood became injured by the cold we should expect two results: (1) The breaking up of the white cells would liberate tissue ferment and so bring about coagulation; (2) the red blood cells would hæmolyse.

For the most part human blood was used for these experiments, as it was found to be difficult to keep rabbit's blood longer than 12 hours without coagulation occurring. As far as rabbit's blood was investigated, however, it agreed entirely with the results given below for human blood. It was aseptically drawn off from the superficial veins of the arm through a very large (⅛ in. bore) needle evenly coated with paraffin. From this it flowed into paraffined test-tubes contained in a special ice chest, the temperature of which averaged +2° C. These tubes were sealed with paraffined corks.

(1) Blood collected quickly in this manner and stored at +2° C. can be kept between three and four days without coagulating. If at the end of three days the plasma and corpuscles be mixed by shaking, and the whole centrifuged, the supernatant plasma is practically unchanged in colour, a few specimens showing the slightest darkening of the straw tint which probably indicated hæmolysis. Even at the end of four days coagulation at this temperature is slow and imperfect, for if the exuded fluid, which is apparently serum, be warmed to +30° C. and a little tissue extract added coagulation again occurs and a fairly firm clot is formed.

(2) Three specimens of the same blood were collected in three well paraffined tubes—A, B, and C.

A. Immersed in melting ice at temperature 0° C. for 30 minutes, then kept at +10° C. for 5 minutes. At the end of this time the blood was quite fluid and slight separation of plasma had occurred. Centrifuged 3½ minutes. Excellent separation of perfectly clear plasma. Plasma and corpuscles were again mixed and centrifuged. Again there was excellent separation of clear plasma.

B. Immersed in ice and salt at temperature − 5° C. for 30 minutes, then kept at + 10° C. for 5 minutes. The blood remained uncoagulated and was centrifuged 3½ minutes. Excellent separation of clear straw plasma. Plasma and corpuscles mixed and centrifuged. The supernatant plasma still remained absolutely clear.

C. Immersed in ice and salt temperature − 9° C. for 30 minutes. The blood became thick and gelatinous. Upon warming to + 10° C. for 5 minutes the blood coagulated, and on centrifuging no separation occurred. The clot was well broken up and the whole again centrifuged. The supernatant serum was stained very dark red, so that it was difficult to distinguish any line of separation.

(3) Three specimens of the same blood in three tubes D, E, F, were kept at +2° C. for 1½ hours. At the end of this time all were uncoagulated and the blood freely mobile.

D. Immersed in melting ice at 0° C. for 1½ hours. Partial separation of plasma occurred. Centrifuged 3½ minutes. Good separation of clear plasma. Mixed and centrifuged again for 2 minutes. Plasma again clear. Warmed to coagulate and kept at room temperature 17° C. for 1 hour. Clot broken up and the whole again centrifuged; supernatant serum absolutely clear.

E. Immersed in ice and salt for 1½ hours. The temperature at start was − 5° C. and slowly rose during the immersion to − 1° C. Partial separation of plasma by gravity. Centrifuged 3½ minutes. Good separation of absolutely clear plasma. Mixed and centrifuged again, plasma still clear. Warmed to coagulate and kept at room temperature for 1 hour. Clot broken up and the whole again centrifuged; serum absolutely clear.

F. Immersed in ice and salt; temperature −12° C., rising to −7° C. during course of experiments (1½ hours). Whole solid; no separation of plasma by gravity. Centrifuged 3½ minutes; no separation, the whole having clotted. Clot broken up; centrifuged again. Serum dark red; difficult to see line of separation. Warmed and kept at room temperature for 1 hour. Mixed and again centrifuged. Serum so red as to be almost opaque to transmitted light.

The conclusions to be drawn from this second group of experiments may be represented by the curves plotted in Figs. 3 and 4. The first point of importance to be noted in regarding these curves is the close similarity between Fig. 3 and Fig. 1, and from it the conclusion may be drawn that the effect of cold upon the actual blood cells, both

white and red, is precisely the same as its effect upon isolated tissue cells. The explanation of the curve in Fig. 4 is not quite so obvious. It must be remembered, however, that, among other things, the presence of tissue extracts containing thrombokinase is essential for the coagulation of the blood. In the case of blood kept at the body temperature the leucocytes, and perhaps the platelets, are in a state of normal activity, and during their metabolism throw off products containing the necessary thrombokinase. As we have already shown, the tissue and blood cells at tempera-

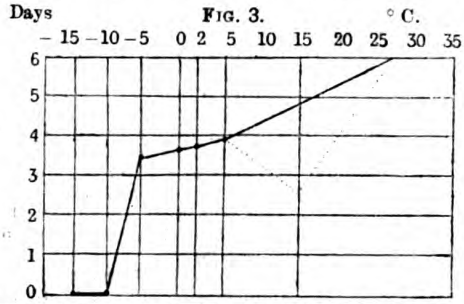


Chart showing the degree of cellular destruction in the blood at varying temperatures. The dotted portion of the chart is not the result of actual experiment, but is the suggested form derived by analogy from Fig. 1.

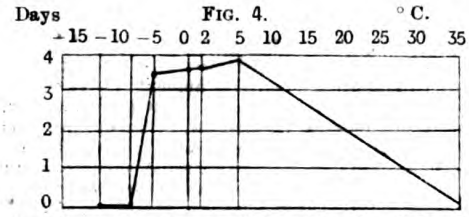


Chart showing roughly the coagulation time in relationship to varying degrees of temperature.

tures in the region of zero are in a state of suspended animation. All metabolic processes are, therefore, inhibited, hence coagulation only occurs after prolonged periods and then very imperfectly. On the other hand, as soon as temperatures below – 6° C. are reached, there is actual physical destruction of the cells liberating the necessary thrombokinase. The blood at this temperature is already frozen (solid), but as soon as the temperature rises clotting must occur. This we consider is a logical explanation of the phenomena recorded in the above paragraphs, and it agrees entirely with the deductions drawn from the first paragraph. As a result we must regard temperatures in the region of – 6° C. (the exact temperature varies a little with different tissues) as being critical in nature as far as the function and activity of both tissues and blood cells go.

3) *Investigation of the Effects of Cold upon the Tissues in Normal Relationship to the Circulatory and Nervous Systems.*

In this branch a considerable amount of work has already been published. In perusing the literature the first thing that strikes one is the difficulty that all experimenters have experienced in producing any signs of frost-bite unless temperatures below the freezing-point of the tissues (that is, – 6° C.) were used. In the recent experiments already quoted by Lorrain Smith, Ritchie, and Dawson, after exposure of rabbit's feet to temperatures just below zero for three days on end, only the slightest reactionary swelling was produced, and, in order to produce anything like marked swelling, it was usually necessary for these observers to apply constricting bands to the legs.

In our own case the experiments were carried out upon rabbits and human skin. For the latter series I have to express my deep thanks to the numerous students at Charing Cross Hospital who so readily offered themselves for these investigations.

Experiments upon Rabbits.

A.—Rabbit anæsthetised, left ear immersed in melting ice for 5 minutes and allowed to warm at room temperature. Ear slightly blue, no swelling. 24 hours, both ears normal. 48 hours, both ears normal.

B.—Rabbit anæsthetised, left ear immersed in ice and salt, temperature – 3° C. for 10 minutes and immediately transferred to water at + 40° C. for 15 minutes. Ear slightly more congested than control, no swelling.

C.—Rabbit anæsthetised, left ear immersed in ice and salt, temperature – 5° C. for 3 minutes, then transferred to water at + 45° C. for 2 minutes. This process was repeated four times in succession. 1 hour, slight increased vascularity of ear, no swelling. 24 hours, ears perfectly normal.

D.—Rabbit anæsthetised, ear immersed in ice and salt, temperature – 10° C. for five minutes and then exposed to room temperature. 1 hour, slight swelling present. 12 hours, very extensive swelling, some blistering.

E.—Rabbit anæsthetised, ear immersed in ice and salt, temperature – 4° C. for 20 minutes, then transferred to water at + 39° C.

Special attention was paid to the state of the vessels. While chilled, certain medium-sized vessels, apparently from their bright-red colour arteries, stood out very well, and the whole appearance of the ear by transmitted light was a healthy pink. Upon warming, these vessels rapidly diminished in size and practically disappeared, only to be replaced by a very large series of vessels, dark blue in colour, which were obviously veins. By transmitted light the ear became very blue and congested. 2 hours, slight congestion remained, no swelling. 12 hours, ear absolutely normal.

This series of experiments was repeated upon rabbit's feet and gave precisely similar results.

Experiments upon Human Skin.

F.—N. C. L., May 15th. Two areas on skin of forearm were used. One, a small area ½ in. in diameter, was exposed to CO_2 snow for 35 seconds. The second larger area was exposed to ice and salt, temperature – 5° C. to – 3° C., in a larger container for 20 minutes. In both cases the arm was transferred immediately to water at + 40° C. Within 10 minutes the first area was blistered, showing that the exudation had been enormous. The second area was rather red, but otherwise normal. 12 hours, blister has increased in size. The second area now normal. Under cover of the blister a slough formed, which separated after 14 days, leaving behind a well-marked depressed scar.

G.—W. J. C., June 5th. Two areas on forearm. The freezing mixture was applied in a tall glass cylinder, and had to be considerably lower than the actual temperature required, owing to the enormous amount of heat conveyed to the area from the underlying tissues. First area: Temperature of mixture – 12° C. to – 10° C. Time 12 minutes. Then immersed in water at + 40° C. The skin did not solidify. Second area: temperature of mixture – 18° C. to – 16° C. Time 12 minutes. Then immersed in water at + 40° C. The skin solidified.

In the first area, other than slight temporary hyperæmia, no effects were produced. In the second area there was immediate swelling of the skin and subcutaneous tissues, the effects of which lasted for several days, and, although the actual destruction was not enough to cause sloughing, yet the overlying skin underwent atrophy, and has left behind a slightly depressed smooth area.

This experiment was repeated several times upon different students and always produced the same result—namely, that unless the skin solidified (that is, reached – 6° C.), no effect other than transient hyperæmia was produced; but the slightest degree of solidification produced swelling.

As a result, then, of this third series of experiments we draw the conclusion that – 6° C. is not only critical in regard to isolated tissues, but also with regard to tissues in normal relationship to the body. At the same time, the transient hyperæmia which invariably occurs in temperatures above – 6° C. must not be overlooked, for, as will be seen later, it is of the utmost importance in the elucidation of the effects of "chilling" as opposed to true frost-bite.

(4) *Investigation into the Effects of Cold upon the Tissues in Abnormal Relationship to the Circulatory and Nervous Systems.*

In the last three groups of experiments we have indicated that below – 6° C. there is actual destruction of tissue, and so, in tissues in normal relationship with the body, swelling and other signs of frost-bite were easily produced when this temperature was exceeded. On the other hand, lesser degrees of cold have very little local effect upon the tissues, and correspondingly signs are very difficult to produce experimentally. Smith, Ritchie, and Dawson[3] have produced swelling of the feet by standing rabbits for several days in cold mud and immersing them in hot water. In other cases, however, the animal was placed on dry mud at temperatures of + 1° C. to – 1° C. for over a week with only the slightest signs of swelling, especially when the warming was slow. In yet other cases the temperature was kept at 0° C. to – 5° C. for as long as five days, and even although a constricting band was used there was no swelling when the legs were slowly warmed. The greater number of their experiments were conducted with constricting bands, which brings in an additional factor. On the whole, the impression derived from their article agrees with the writer's experience—namely, that it is difficult to produce any pathological change at temperatures above – 6° C. This being so, it will be difficult to estimate the effect of placing the part in abnormal relationship to blood and nerves. In the following series of experiments special attention was therefore paid to the condition of the vessels in those cases where temperatures above – 6° C. were used, while in those below this temperature

the swelling and blistering of the parts formed obvious indications. As in the last group, the experiments were conducted upon rabbits' ears and legs and upon human skin.

Experiments upon Rabbits.

A.—All the nerves going to the left ear were "blocked" at the base with ½ per cent. cocaine. Around the base of the opposite ear (control) a corresponding amount of Ringer's solution was injected. Under general anæsthesia both ears were exposed to freezing solution at −20° C. for 10 minutes and then immersed in water at + 40° C. for a further 10 minutes. The vascular changes during this experiment were exactly the same as those given in the corresponding experiment in the last group. No swelling or other signs of frost-bite occurred, the general congestion of both ears having passed off in 12 hours.

B.—The internal and external popliteal nerves (left) were blocked with 1 per cent. cocaine in the popliteal space. Control injection of Ringer into the right popliteal space. Both immersed in freezing solution temperature − 6° C. for 10 minutes. The legs did not solidify, transferred to water at + 40° C. Slight transient congestion of both feet, no other swelling or other signs of frost-bite occurred.

C.—Injections similar to those in B. Immersed in freezing solution, temperature − 16° C. for 10 minutes and then in water at + 40° C. 2 hours later right foot slightly swollen, left not swollen. 12 hours later there was extensive swelling of the right foot and slight swelling of the left.

D.—Three minims of stovaine and glucose solution injected, probably extrathecally, into the spinal column between the second and third sacral vertebræ. Right leg immersed in ice and salt at − 15° C. for 12 minutes, and then in water at + 40° C. Upon recovery from the general anæsthetic the animal was paralysed in both hind legs. This passed off in the course of two to three hours. 12 hours later there was extensive swelling of the right foot, which lasted several days.

Note.—Spinal injections are difficult in rabbits owing to anatomical arrangements of the dura and cord. In two other cases this experiment was attempted, but in each case a permanent paralysis of one leg occurred. The animals were killed, and at post-mortem examination a small area of œdematous tissue was found surrounding the cord in the region of the injection. These experiments are of interest, however, in view of the fact that in one case, despite the exposure of the feet to freezing mixture at − 12° C. for 10 minutes, followed by water at + 40 C., no signs of frost-bite occurred. In the third case slight swelling of one foot occurred after 12 hours.

E.—The perivascular tissues around the femoral vessels on the left side were infiltrated at two points with 1 per cent. cocaine. Both legs immersed in freezing mixture at − 15° C. for 10 minutes, and then in water at + 40° C. One hour later there was slight swelling of the right foot. In 12 hours both legs were extensively swollen, the right rather more than the left.

F.—Dorsum of left foot infiltrated with 1 per cent. cocaine ½ c.c. Dorsum of right foot infiltrated with adrenalin 1 in 10,000 ½ c.c. Both immersed in freezing mixture at − 15° C. for 8 minutes, and then in water at 40° C. 1 hour, left foot slightly swollen and hot; right foot no swelling, cold. 12 hours, left foot extensive swelling; right foot no swelling. 36 hours, left foot less swollen; right foot now swollen. 72 hours, left foot normal again; right foot extensive swelling.

G.—Both feet immersed in freezing mixture at - 3° C. for 20 minutes, and then in water at + 40° C. The left leg had an elastic constricting band above the ankle. While chilled the right was bright pink in colour, the left cyanotic. Upon warming the right foot became blue, and the left very congested and cyanotic 2 hours, very slight swelling of the left foot; right apparently normal. 24 hours, both feet normal.

Human Experiments.

H.—N. C. L., May 15th. Three areas on the forearm were exposed to CO_2 snow for 30 seconds. The highest was used as a control; the centre was completely surrounded by a ring of novocaine and adrenalin, with deeper injections into the fascia to complete the "blocking." The lower area was rendered anæmic by a piece of plate glass strapped tightly on to the arm. In all cases the arm was immersed in water at + 40° C. at the end of the experiment. The control area blistered within 10 minutes and eventually left behind a depressed scar. The middle area showed slight signs of congestion. After two or three days there was slight scaling of the cornified layer. There was absolutely no swelling, no blistering, and no scar remained. The lowest area blistered even more quickly than the control, and a slough having separated has left behind a depressed scar.

The experiment when repeated did not give absolutely constant results. This depends in all probability upon the time of exposure and the type of skin. For instance, in two cases (W. E. P. and N. S.) the upper and lower areas blistered quickly, as in Experiment H. The centre area raised a small and imperfect blister after two to three days' delay.

I.—M. A. O., June 10th. Two areas, the first injected with 1 per cent. cocaine, the second with Ringer's solution. Exposed to ice and salt at − 16° C. for 12 minutes. Within 10 minutes the second area showed marked swelling; the first, although reddened, was not swollen.

J.—W. J. C. June 10th. Two areas, one infiltrated with adrenalin, in 10,000, the second with 1 per cent. cocaine in Ringer. CO_2 snow then applied to each for 15 seconds. After 15 minutes there was swelling of the second area, the first, although reddened, was not swollen. 12 hours, second area covered by a large blister; first area, except for discolouration, was normal. 30 hours, the first area had started to blister. 1 week, both areas showed sloughing of equal extent.

The conclusions drawn from this group of experiments are that in true frost-bite, produced by temperatures below −6° C., there is actual tissue destruction, due directly to the cold, the effects of which it is, therefore, impossible to prevent entirely by modifying either the blood or nerve supply to the part. In the case of chilling alone, produced by temperatures above −6° C., the normal congestion of the parts is not prevented by nerve blocking, although it may be less severe; it is, however, prevented by the local injection of adrenalin, and to some extent also by local injection of cocaine. The results obtained in the case of human skin agree very closely with those obtained in the limbs of rabbits.

(5) *Conclusions Drawn from these Experiments with Regard to the Pathology and Treatment of the Effects of Cold.*

In the short conclusions given at the end of each group of experiments we have drawn attention to the fact that cold below − 6° C. has a very different effect from cold above that temperature, and have suggested that this temperature must be considered as being decidedly critical in nature. Constant results were obtained in all varieties of experiments and upon all tissues. Many writers would appear to suggest that the effects of cold are slowly progressive and vary concurrently with the extent of drop in the temperature. The curves given above show that this theory cannot be held. The sudden drop at −6° C. implies that at this temperature some additional factor occurs, probably in the nature of a physical change which destroys absolutely the protoplasmic content of the cell. The changes occurring at temperatures above this point are changes of degree and of a chemical nature; once the freezing-point of the protoplasm is reached, however, fundamental changes occur in the cells of a gross physical character. The gradual depression in the curve which occurs in the region of +15° C. fits in entirely with the above suggestion of chemical changes, and is probably explained in the following manner.

The essential vital process of any cell is summed up in the word metabolism, and this consists of a delicate balance between anabolism and catabolism. In the living cells the protoplasmic molecule by means of side chains attaches to itself certain anabolic products of food assimilation. This chemical (query physico-chemical) union will require the absorption of a certain amount of energy. At the same time the protoplasm is being continually broken up (by the total function of the cell) and metabolic products thrown off. During this process a certain amount of energy will, of course, be liberated in various forms (heat, motion, &c.). Of these two processes anabolism being of the nature of a synthesis, and requiring external energy in the form of heat, is the more easily affected by external agencies and may be considered to be the more delicate of the two. During the process of chilling of the tissues, therefore, although both will be affected, we shall expect *a priori* that anabolism will stop before catabolism. At temperatures in the region of +15° C. anabolism may be assumed to have stopped entirely, while catabolism continues slowly. When temperatures in the region of zero are reached catabolism also stops, and so it follows that tissues at the temperature of 0° C. can be preserved for longer periods than those at +15° C. The question of the effect of autolytic enzymes has been purposely ignored, for their function is so bound up with the metabolism of the cell protoplasm as to be included in the above suggestions. The analogy to some of the high explosive compounds is fairly accurate. These compounds are notoriously unstable; if raised to the explosive temperature rapid combination with oxygen occurs and the explosion results; this corresponds to normal cell metabolism. If stored at rather lower temperatures they fairly rapidly degenerate into simpler and more stable compounds. When stored at low temperatures, however, they retain their potential explosive properties over considerable periods, being meanwhile quite stable. At the risk of repetition, we again state that the effects of cold below and above −6° C. respectively can in no way be compared—the one is chemical, the other physical, and the difference between them is as great as that between a mixture of hydrogen and oxygen gases in a tube and the water which results from their chemical combinations. From this point onwards, therefore, we shall divide these considerations into the effects of true "frost-bite" and the effects of chilling of the tissues.

Effects of True Frost-bite.

Frost-bite produces actual destruction of tissue and, as a result, the pathological effects are numerous. In the minor cases the destruction of the endothelial walls of capillaries allows of a rapid exudation of the fluids and also in some cases of the cells of the blood into the surrounding tissues. In some cases the endothelial and other cells, by their destruction, will set free tissue extracts and so intravascular clotting will occur. This process may extend until the larger vessels are affected and lead to complete cutting off of the blood-supply followed by gangrene. In other cases the actual pressure of the exuded fluids will bring about the same result. In the minor cases the destroyed tissues will be

absorbed slowly by a process of aseptic inflammation and leave as a result a certain amount of fibrosis and scarring. In the worst cases the whole thickness of the part is affected (this takes a considerable exposure, as the deeper tissues freeze slowly) and necrosis or sloughing occurs. In addition to these results, in many cases there will be microbic infection with its concurrent effects. Clinically the results of frost-bite are rarely seen in our temperate climate, but in other countries they are not at all uncommon. In Canada, for instance, a large number of cases occur every year and are often of the utmost severity. It is interesting to note in this connexion that in the *Journal of the Royal Naval Medical Service*[9] a case of true frost-bite is recorded as occurring during an aeroplane flight at a height of 15,000 feet, the calculated temperature at this height being 34° below zero.

It now remains to be seen whether we can prevent or in any way diminish these effects. Bearing in mind the pathology of the condition as given above, we should *a priori* expect that very little could be hoped for in the way of treatment. The experiments detailed in Group 4 absolutely confirm this prognostication. Whether the nerves to the part were blocked with cocaine or the blood-supply was temporarily cut off, the results were invariably the same. If the vaso-motor nerves accompanying the blood-vessels were blocked by perivascular infiltration with cocaine the results were no better. There is, however, one exceedingly important observation which must not be overlooked—namely, that the local injection of cocaine or, better, of adrenalin in one or two cases entirely prevented the exudation, and in all cases caused considerable delay and probably lessened the amount. This delay in some of the cases amounted to three or four days. The explanation of this phenomenon rests with the vaso-motor system. With regard to the effects of temperature changes upon the calibre of the vessels, too much emphasis has been laid upon the nervous reflex. The above experiments would tend to show that the central mechanism in this case is quite subsidiary to the local one. It is a well-known fact that involuntary muscle fibres react to temperature changes by contracting during falls and relaxing when the temperature is raised. The involuntary muscle of the arterial walls may be expected to form no exception. It must be remembered that the circulatory system may be divided up into four main types of vessels—namely, the larger arteries, containing very little musculature; the arterioles, which are exceedingly muscular, and which, in the normal condition of arterial tone, act as a dam protecting the capillaries, through which alone exudation occurs, from the arterial blood pressure; and finally the veins, with little or no musculature, but capable of great distension. The first effect of cold will be to contract the musculature of the arterioles. This, as proved by some of the experiments in Group 3, occurs in the presence of nerve blocking, and so must be due to the direct effect of cold upon the muscle. The contraction of the arterioles occurs to such an extent as completely to obliterate the vessels. The capillaries and veins will therefore be comparatively empty, while the larger arteries will be distended at full pressure, hence the red appearance of the parts by transmitted light. When the part becomes frost-bitten, the muscles of the arterioles are destroyed. As a result upon thawing the damming effect of the arterioles upon the blood pressure is lost and the capillaries become subject to sufficiently high pressure to cause exudation. If the endothelial wall is also destroyed by the cold, then the exudation will be all the more rapid and extensive. Both cocaine and adrenalin cause a local contraction of the vessels by direct effect upon their walls and so the vessels just beyond the frost-bitten area will remain contracted, even when thawing occurs. This will prevent the blood pressure in capillaries from rising and so no exudation occurs. As the effects of the local injection begin to wear off, however, the capillary pressure will rise, and, should the wall have been seriously damaged by the frost-bite, delayed exudation will now occur. If, on the other hand, the capillary wall is now normal, no exudation will occur. This appears to afford a simple and logical explanation of the phenomena of late exudation and of those cases where no exudation occurs, the injury in these latter cases being submaximal and the capillary walls rapidly restored to the normal condition. In the severe cases, therefore, nothing can be done. In the milder cases, however, it has been pointed out that, in addition to the actual direct destruction, there are the effects produced by the exudation itself. Indeed, a vicious circle is set up, for the greater the exudation the greater the venous obstruction, and the greater the venous obstruction the greater the rise in the capillary pressure, and hence the greater the exudation. Although, therefore, it will be impossible to prevent or remedy the destructive effects of the cold, it would seem reasonable to attempt to limit the exudation and so to prevent additional damage. This can be accomplished by preventing any considerable rise in capillary pressure, both by damming back the arterial blood and by ensuring quick venous return. The former method has been carried out in this work by the local injection of vaso-constrictors, and although this method is impracticable in the majority of human cases, treatment by the use of intravenous injections of vaso-constrictors is worthy of trial. The disadvantage of all the vaso-constrictors is that it is difficult, and in some cases impossible, to localise their action to the desired area, and, again, in some cases the effect is very transitory and followed by a reactionary dilation which renders the condition worse. By the judicious use of injections of strychnine and ergot it should be possible to keep up a fair degree of vaso-constriction over the first two or three days, and particularly is this necessary during thawing. In discussing this suggested treatment with colleagues, it has frequently been objected that the use of vaso-constrictors in any condition approximating to gangrene is surely not indicated. This objection undoubtedly holds in the case of severe frost-bite, causing necrosis of the part, for all that can be hoped for in such cases is the formation of a line of demarcation and the separation of the dead tissue. In the minor cases of true frost-bite, however, we believe that many of the evil effects are due to the excessive exudation, and that therefore the use of vaso-constrictors to limit the exudation is indicated. We have, unfortunately, not been in a position to give this treatment a trial.

The Effects of Degrees of Cold Above −6° C. upon the Tissues.

We now pass to a consideration of the effects of cold above the critical temperature upon the tissues; this will include one of the essential factors in the production of "trench foot."

S. Delépine[11] has suggested the use of the term "frigorism" to denote this condition. This English equivalent of the French "froidure," although not very euphemistic, is certainly an improvement upon "water-bite."

In the condition of suspended animation brought about by such temperatures it should theoretically be possible to preserve tissues indefinitely; practically this is not the case. It is certain, however, that tissues may maintain their vitality for periods of from six to eight weeks in this condition. At the end of the first series of experiments we drew attention to the fact that in growths which had been stored for 16 days at + 2° C. the onset of the signs of diminished vitality did not occur any sooner than in the controls which were kept at + 37·5° C. In both cases the periods averaged five to six days of incubation. It would appear, therefore, that during the 16 days at + 2° C. no degenerative change in the tissues worthy of consideration could have occurred. As we should expect also no oxygen is used up in this condition, for the slides are sealed and the supply of oxygen strictly limited and equal in the chilled specimens and in the controls. The bright pink colour of the chilled parts in the third and fourth groups of experiments also indicates that the absorption of oxygen at these temperatures is reduced to a minimum. Theories which assume that the changes are due to ischæmia cannot be accepted, for the chilled tissues need neither nutriment nor oxygen. Clinically, it is found that the actual time of exposure rarely exceeds three or four days, and in this time, in view of the above experiments we can scarcely assume any change in the actual cells of the tissue (from cold alone) likely to bring about the extensive swelling and sometimes gangrene which occur. The essential process would appear to be exudation; the other changes—gangrene, paræsthesiæ, &c.—can be easily explained as being secondary to the exudation and dependent upon it.

The paræsthesiæ appear to have attracted the attention of many authors. Fearnsides[12] divides the cases up into those showing objective changes and those with subjective changes

only (paræsthesiæ) and explains the latter as a neurosis or psychical anæsthesia. Most observers (Fearnsides,[12] Watson and Myers,[13] Swan[14]) agree that in the cases with most swelling the hyperæsthesia was least marked. The clinical experiences of the writer agree with this. It is possible to account for all these phenomena by assuming an interneural or even intraneural exudation into the larger nerves. Obviously a slight degree of intraneural exudation will produce more subjective symptoms than a large degree of interneural exudation. The exudation rarely occurs either experimentally or clinically before the part is warmed. Failing a satisfactory explanation from any direct effect of cold, let us examine the vaso-motor conditions during the warming process. At the start the arterioles are contracted practically to obliteration, and pressure in capillaries and veins is at a minimum. As the temperature rises the involuntary muscle fibres, having been in a state of tonic contraction for a considerable period, become relaxed and for the time paralysed. An enormous dilatation of the arterioles, therefore, occurs and the full arterial pressure is transmitted to the capillaries. Whether the endothelial walls of these be damaged or no, the rise of pressure is so great as to cause the fluid contents of the blood to filter through the walls in exactly the same manner as serum passes through a porcelain filter when the pressure is sufficiently raised. This exudation will contain fibrinogen, and hence the deposit of fibrin in the tissues. The exudation will now press upon the veins and so the vicious circle starts. In the same way any artificial obstruction to the venous return will increase the capillary pressure, and therefore the exudation. This probably explains the very marked increase in swelling which the presence of a constricting band produces, either experimentally or clinically, and indicates an important line of prophylaxis. This great vaso-dilation is, we believe, more local than reflex in origin, since experimentally it occurs when all the nerves going to the part are blocked with cocaine.

We should expect this condition to be much more difficult to produce experimentally in animals than in man, for in animals the musculature of the arterioles is normally subject to greater changes than in man, and so is less likely to be rendered paralytic by temperature variations. The difference, then, between the pathology of true frost-bite and of chilling lies essentially in the nature of the local damage. In the first instance the cells are killed by cold, and therefore only in mild cases can any treatment be of much avail. In the second instance the damage is secondary to the excessive exudation, and this to the great rise in the capillary pressure. If, therefore, the capillary pressure can be kept low while the arterioles regain their tone, then the conditions will be amenable to treatment.

Although, therefore, the pathology of the two conditions is different, the treatment of both rests in preventing too great rise of capillary pressure. The suggestions given, therefore, for the treatment of frost-bite will apply equally well to the treatment of chilling. Better than treatment, however, is prophylaxis. Any condition likely to bring about venous congestion (constricting bands, puttees, tight boots, standing too long in one position, &c.) must be avoided. Variations in the temperature will bring about more rapid paralysis of the arterioles than constant cold, and so should, as far as possible, be avoided. This is difficult to accomplish in a limb the blood supply of which is considerably diminished. A thin layer of dry air surrounding the limb will help immediately.

S. Delépine[11] has suggested the use of imperishable oiled silk bags to be worn outside the socks as a practical means of attaining this end. Indeed, we believe that the bad effects of water are chiefly brought about by its acting as a good conductor of the varying degrees of cold.

It should be noted here that McNeil[10] calls the condition "water-bite" and considers that it is due entirely to osmosis, the tissue being distended with dilute plasma. It is difficult to believe that any degree of osmotic action could occur through the thick protective skin of the feet; and, indeed, the experiments of Rideal and Waller[3] already quoted show that, experimentally, swelling, except of the superficial layers of the skin itself, is not produced even when the exposure is prolonged. "Water-bite" would therefore appear to be an unsatisfactory term, as it fails to indicate the primary factor.

Once the limb has become definitely "chilled" treatment should be immediately started. It would appear better to keep the limb cold by the application of wet cloths until efficient treatment can be given than to allow partial warming to occur. The actual treatment will consist in using any and every means of preventing too great a rise in the capillary pressure. As to whether the use of vaso-constrictors, as suggested above, will be of any avail remains to be seen. They should obviously be given before the part is warmed, and once they are acting, the parts should be warmed not too slowly. If, on the other hand, vaso-constrictors cannot be given, then the part must be very slowly raised to the normal temperature, for this tends to diminish the degree of vasomotor paralysis. Elevation of the limb and gentle massage, by aiding the return of blood and diminishing the capillary pressure, will be of value in after-treatment. They will also be of great use as a means of prophylaxis.

During rest periods the legs should be elevated and not allowed to dangle over the edge of the dug-out. The legs should meanwhile be well massaged, for during the rest period partial thawing is very apt to occur and to start off the train of events. The more powerful of the vaso-constrictors should be given immediately, if at all, and followed by those having gentler and more prolonged action. These must be continued for the first three or four days.

Treatment on these lines has not yet been applied to actual cases of "trench foot," as the opportunity has not arisen. It may well be impracticable to bring about the desired vaso-constriction. We feel sure, however, that it is along these lines that a satisfactory treatment should be sought.

In conclusion, it should be mentioned that at one period it was hoped that blocking of the large nerve trunks or preferably of the cord itself by spinal injections of novocaine would give good results by stopping the reflex nervous dilatation of the vessels. We have shown, however, that for the rabbit at least the dilatation is mainly the result of the local mechanism, whether it be directly muscular or through a local nerve reflex matters not. In transferring the results to man, however, caution must be used, for in this case the local mechanism may play a smaller part in the production of the condition. If this be so, then we may still hope for some success by spinal injection, combined with the action of vaso-constrictors, and certainly in at least one case (exp. 4 D), in which a spinal injection was given no swelling occurred, although the leg was rendered solid by immersion at −12° C. for 10 minutes.

Summary.

(1) The temperature −6° C. must be considered critical in relationship to the effects of cold upon the tissues.

(2) Degrees of cold below this temperature produce true frost-bite and actual damage to tissues.

(3) Degrees of cold above this temperature only produce effects secondarily by causing vasomotor paralysis.

(4) Nerve blocking does not prevent either the effects of frost-bite or of chilling.

(5) The use of vaso-constrictors delays the swelling in cases of true frost-bite, while in cases of chilling the exudation may be entirely prevented.

(6) Satisfactory treatment of trench foot must be directed towards preventing any appreciable rise in capillary pressure.

(7) In the production of trench foot cold must be considered the essential factor, other factors being either secondary or subsidiary.

(8) Treatment by the use of vaso-constrictors, either intravenously or otherwise, would appear logical and worthy of trial.

(9) Treatment by nerve-blocking, either regional or central, is also suggested, although, in all probability, it cannot be expected to give good results unless used in conjunction with vaso-constrictors.

(10) Prophylaxis consists in using any and every means of preventing congestion of the legs, and in avoiding, as far as possible, variations in the temperature.

(11) The question as to whether any surgical procedure, such as temporary occlusion of the arteries, would bring about the desired reduction in capillary pressure is being investigated.

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THE CHEMICAL AFFINITIES OF *VIBRIO CHOLERÆ*.

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A KNOWLEDGE of the susceptibilities and resistances of micro-organisms to various chemical bodies is of great importance. For by the application of this knowledge we may obtain selective media for the isolation of bacteria and specific disinfectants or even substances of curative value in disease.

In an investigation of the chemical affinities of an organism two end-points may be determined—namely, the greatest dilution of the substance which is being tested which will destroy the organism in a definite time, and the minimum amount in a culture medium which will prevent the growth of the organism. I use a special apparatus consisting of a series of clamped multiple pipettes which enables the determination of these factors to be carried out rapidly.

The *Vibrio choleræ* is an excellent example of an organism which possesses peculiar chemical affinities. The first substances which were tested with this organism were various acids and alkalies, and the dilutions of these were prepared from standard normal solutions. All the dilutions in these experiments were made with 1 per cent. peptone water.

Alkaline Media.

Chart I. shows the relative resistance of the *Vibrio choleræ* to caustic soda. It is seen that the vibrios remain alive in peptone water containing 3·5 c.c. of N.NaOH to every 100 c.c., whereas the other organisms such as *B. typhosus* and *B. coli communis* are far less resistant.

In Chart I. the last columns represent the results when a quantity of normal stool is mixed with peptone water and tested in the same manner as the cultures. In this particular test the cholera vibrio was slightly more resistant than any organisms present in the sample of fæces; this hardly represents the usual results which have since been obtained in other experiments, because certain fæcal bacteria such as *Bacillus acidi lactici* (Huppe) have the same resistance to alkalies, and spore-bearing organisms have a much greater resistance than the cholera vibrio.

Chart IA. demonstrates the amount of growth which takes place in alkaline media of various strength in 48 hours. Thus the vibrio is capable of flourishing in a relatively strong alkaline medium. Even when 3·5 per cent. of N.NaOH was present in the media the vibrios grew on the surface with pellicle formation.

Charts II., III., and IV. represent the actions of sodium carbonate, sodium bicarbonate, and potassium bicarbonate respectively on the *Vibrio choleræ* and other organisms.

CHART III.

Amount of N.NaHCO$_3$ in 100 c.c. of media.	*V. choleræ.* Hours ½	1½	3	5	24	*B. coli communis.* Hours ½	1½	3	5	24
7·5 c.c.	+	+	+	+	+	+	+	+	+	+
10 ,,	+	+	+	+	+	+	+	+	+	+
15 ,,	+	+	+	+	+	+	+	+	+	+
17·5 ,,	+	+	+	+	+	+	+	+	+	+
20 ,,	+	+	+	+	+	+	+	+	+	-
25 ,,	+	+	+	+	+	+	+	-	-	-
35 ,,	+	+	+	+	+	+	+	-	-	-
50 ,,	+	+	+	+	+	+	-	-	-	-
75 ,,	+	+	+	+	-	-	-	-	-	-
100 ,,	+	+	+	+	-	-	-	-	-	-

CHART IV.

Amount of N.KHCO$_3$ in 100 c.c.	*V. choleræ.* Hours ½	1½	3	5	24	*B. coli communis.* Hours ½	1½	3	5	24
7·5 c.c.	+	+	+	+	+	+	+	+	+	+
10 ,,	+	+	+	+	+	+	+	+	+	+
15 ,,	+	+	+	+	+	+	+	+	+	+
17·5 ,,	+	+	+	+	+	+	+	+	+	+
20 ,,	+	+	+	+	+	+	+	+	+	-
25 ,,	+	+	+	+	+	+	+	+	+	-
35 ,,	+	+	+	+	+	+	+	+	-	-
50 ,,	+	+	+	+	+	+	+	-	-	-
75 ,,	+	+	+	+	-	+	-	-	-	-
100 ,,	+	-	-	-	-	-	-	-	-	-

+ = Living. - = Destroyed.

The *Vibrio choleræ* grew abundantly in 48 hours in media containing 7·5 per cent. and 10 per cent. of normal sodium bicarbonate. No growth of *B. coli* took place in these strengths.

Calcium hydrate was the next alkaline substance which was tested; the dilutions were made by saturating with calcium oxide 1 per cent. peptone water which had been thoroughly boiled to expel any carbonic acid gas which might be present. The strength of this saturated solution was estimated by titrating with N/10 HCl and the various

CHART I.

Amount of N.NaOH in 100 c.c.	*V. choleræ.* Hours ½	1	1½	2	3	5	24	*B. typhosus.* Hours ½	1	1½	2	3	5	24	*B. dysenteriæ.* Hours ½	1	1½	2	3	5	24	*Mixture of fæcal organism.* Hours ½	1	1½	2	3	5	24	Extract of fæces. Hours ½	1	1½	2	3	5	24
1 c.c.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2 ,,	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2·5 ,,	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	-	-	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
3 ,,	+	+	+	+	+	+	+	+	-	-	-	-	-	+	-	-	-	-	-	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+
3·5 ,,	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	+	+	+	+	-	-	-
4 ,,	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHART IA.

Amount of N.NaOH in 100 c.c.	*V. choleræ.*	*B. typhosus.*	*B. dysenteriæ.*	Mixture.	Fæcal emulsion.
1 c.c.	++	+	+	++	++
1·5 ,,	++	+	-	+	++
2 ,,	++	-	-	-	++
2·5 ,,	++	-	-	-	+
3 ,,	+	-	-	-	-
3·5 ,,	+	-	-	-	-

* This mixture comprised *B. coli communis*, *B. coscorba*, *B. neapolitaneus*, and Nos. 71 and 106 McConkey's list. + = Growth in subcultures. - = No growth in subcultures.

+ = Growth. - = No growth.

CHART II.

Amount of Na_2CO_3 in 100 c.c. of media.	Emulsion of fæces. Hours ½	1½	3	5	24	*Vibrio choleræ.* Hours ½	1½	3	5	24	Mixture of fæcal organisms. Hours ½	1½	3	5	24	*B. coli communis.* Hours ½	1½	3	5	24	*B. typhosus.* Hours ½	1½	3	5	24	*B. dysenteriæ.* Hours ½	1½	3	5	24
5 c.c.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	—	—	+	—	—	—	—
7·5 ,,	+	+	+	+	+	+	+	+	+	+	+	+	+	—	—	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—
10 ,,	+	+	+	+	*+	+	+	+	+	—	+	+	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·5 ,,	+	+	+	+	*+	+	+	+	+	—	+	+	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5 ,,	+	+	+	+	—	+	+	+	—	—	+	+	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7·5 ,,	+	+	+	+	—	+	+	+	—	—	+	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10 ,,	+	+	+	+	—	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15 ,,	+	+	+	—	—	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25 ,,	+	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30 ,,	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Spore-bearing organism. + = Living—i.e., growth in subcultures. — = Destroyed—i.e., no growth in subcultures.

dilutions which were required were made from this. Chart V. shows the results.

CHART V.

Percentage of calcium oxide.	*V. choleræ.*					*B. coli communis.*					*B. typhosus*					*B. dysenteriæ*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0·02 %	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–
0·04 ,,	+	+	+	+	+	+	–	–	–	+	–	–	–	–	+	–	–	–	–	–
0·05 ,,	+	–	–	–	–	+	–	–	–	–	+	–	–	–	–	+	–	–	–	–
0·06 ,,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Acid Media.

The resistance of the vibrio to the action of alkalies has its counterpart in its susceptibility to the action of acids.

The organism is killed in half an hour in a solution of peptone water which contains 1·5 per cent. of normal hydrochloric acid. It is not so readily destroyed in a broth solution of this strength of acidity, and the explanation of this may be that the acid has formed acid salts to which the organism is more resistant. Numerous organic acids, such as lactic, butyric, caproic, valeric, and propionic were tested, and gave very similar results. Charts VI. and VII. show the results with lactic and butyric respectively.

Chart VIII. shows the results when phosphoric acid (H_3PO_4) was used.

Most organisms are very resistant to the acid salts. *B. coli communis* will flourish in a medium containing 2 per

CHART VI.

Percentage of lactic acid.	*V. choleræ.*					*B. dysenteriæ*					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0·01 per cent.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·025 ,,	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·5 ,,	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·075 ,,	–	–	–	–	–	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+
0·1 ,,	–	–	–	–	–	+	–	–	–	–	+	+	+	+	–	+	+	+	+	+
0·2 ,,	–	–	–	–	–	+	–	–	–	–	+	+	–	–	–	+	+	+	+	–
0·3 ,,	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	+	+	–	–	–
0·4 ,,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

CHART VII.

Percentage of butyric acid.	*V. choleræ.*					*B. coli communis.*				
	Hours.									
	½	1½	3	5	24	½	1½	3	5	24
0·025 %	+	+	+	+	+	+	+	+	+	+
0·05 ,,	+	+	+	+	+	+	+	+	+	+
0·075 ,,	+	–	–	–	–	+	+	+	+	+
0·1 ,,	+	–	–	–	–	+	+	+	–	–
0·2 ,,	–	–	–	–	–	+	+	+	–	–
0·3 ,,	–	–	–	–	–	+	+	+	–	–
0·4 ,,	–	–	–	–	–	+	+	–	–	–

CHART VIII.

Percentage of H_3PO_4.	*V. choleræ.*					*B. dysenteriæ.*					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0·05 %	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·1 ,,	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·2 ,,	–	–	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0·4 ,,	–	–	–	–	–	+	–	–	–	–	+	–	–	–	–	+	+	–	–	–
0·8 ,,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	–	–	–

CHART IX.

Percentage of $NaHPO_4$.	*V. choleræ.*				
	Hours.				
	½	1½	3	5	24
1 %	+	+	+	–	–
2 ,,	+	+	+	+	–
3 ,,	+	+	+	–	–
4 ,,	+	+	–	–	–
5 ,,	+	–	–	–	–

CHART X.

Percentage of sodium chloride.	*V. choleræ.*					*B. coli communis.*				
	Hours.									
	½	1½	3	5	24	½	1½	3	5	24
7·5 %	+	+	+	+	+	+	+	+	+	+
10 ,,	+	+	+	+	–	+	+	+	+	+
12·5 ,,	+	+	+	–	–	+	+	+	+	+
15 ,,	+	+	–	–	–	+	+	+	+	+
20 ,,	+	+	–	–	–	+	+	+	+	+
25 ,,	+	–	–	–	–	+	+	+	+	+
30 ,,	+	–	–	–	–	+	+	+	+	–

CHART XI.

Percentage of calcium chloride.	*V. choleræ.*					*B. coli communis.*				
	Hours.									
	½	1½	3	5	24	½	1½	3	5	24
4 %	+	+	+	+	+	+	+	+	+	+
5 ,,	+	+	+	+	+	+	+	+	+	–
10 ,,	+	+	+	–	–	+	+	+	–	–
15 ,,	+	+	–	–	–	+	+	+	+	–
20 ,,	+	+	–	–	–	+	+	+	–	–

cent. of the acid phosphate of soda, and it is not destroyed in 24 hours in 7·5 per cent. solution of this salt. The cholera vibrio is relatively as susceptible to the action of acid salts as it is to the action of acids; the results of an experiment are shown in Chart IX.

A large number of salts were tested next, and as a general rule it may be stated that the vibrio is killed more rapidly by the action of salts than any organisms of the typho-colon group. The action of calcium chloride was an exception to this, for the vibrio exhibited almost as much resistance to this body as *B. coli communis*. Chart X. and XI. show the results with sodium chloride and calcium chloride respectively.

Aniline Dyes.

Many aniline dyes have very marked antiseptic properties and they are especially active on the *Vibrio choleræ*.

Charts XII., XIII., XIV., XV., XVI., XVII., and XVIII. show the results with fuchsin, methylene blue, methyl

CHART XII.—*Fuchsin.*

Strength of fuchsin solution.	*V. choleræ.*					*B. typhosus.*					*B. dysenteriæ.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-15,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-10,000	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-8,000	+	+	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-6,000	+	+	–	–	–	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
1-4,000	+	–	–	–	–	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+
1-2,000	–	–	–	–	–	+	+	+	+	+	–	–	–	+	+	+	+	+	+	+
1-1,000	–	–	–	–	–	+	+	+	+	–	–	–	–	+	+	+	+	+	+	+

CHART XIII.
Methylene Blue.

Strength of methylene blue.	*V. choleræ.*				
	Hours.				
	½	1½	3	5	24
1-2,000	+	+	+	+	+
1-800	+	+	+	–	–
1-500	–	–	–	–	–

In the strength of 1-500 *B. typhosus*, *B. dysenteriæ*, and *B. coli* were not killed in 24 hours.

CHART XIV.—*Methyl Violet.*

Strength of methyl violet solution.	*V. choleræ.*					*B. dysenteriæ.*					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-16,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-8,000	–	–	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-4,000	–	–	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-2,000	–	–	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-800	–	–	–	–	–	+	–	–	–	–	+	+	+	+	+	+	–	–	–	–
1-500	–	–	–	–	–	–	–	–	–	–	+	+	+	–	–	–	–	–	–	–

violet, methyl green, bismarck brown, brilliant green, and crystal violet.

CHART XV.—*Methyl Green.*

Strength of methyl green solution.	*V. choleræ.*					*B. dysenteriæ* Shiga.					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-3000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-4000	+	+	+	+	−	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
1-2000	+	+	−	−	−	+	+	−	−	−	+	+	+	−	−	+	+	+	+	+
1-800	+	−	−	−	−	+	+	−	−	−	+	+	−	−	−	+	+	−	−	−
1-500	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	+	+	−	−	−

CHART XVI.—*Bismarck Brown.*

Strength of Bismarck brown solution.	*V. choleræ.*					*B. dysenteriæ* Shiga.					*B. typhosus*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-4000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
1-2000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
1-800	+	+	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	+
1-500	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	−	−	+

CHART XVII.—*Brilliant Green.*

Strength of brilliant green solution.	*V. choleræ.*					*B. dysenteriæ* Shiga.					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-640,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-320,000	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-160,000	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-120,000	+	+	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-80,000	+	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-40,000	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-20,000	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+
1-8,000	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−
1-4,000	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−
1-2,000	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−
1-1,000	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−
1-500	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−

The *Vibrio choleræ* did not grow in dilution of 1 in 1,000,000. *V. dysenteriæ* and *B. coli communis* produced opacity of the broth in 48 hours in a dilution of 1 in 80,000, and *B. typhosus* grew well in 1 in 40,000 and 1 in 80,000 in 24 hours, and in 2 hours produced considerable opacity in the media in the dilution up to 1 in 4000.

CHART XVIII.—*Crystal Violet.*

Strength of crystal violet solution.	*V. choleræ.*					*B. coli*	*B. typhosus.*	
	Hours.							
	½	1½	3	5	24	24	5	24
1-1,000	−	−	−	−	−	+	+	−
1-2,000	−	−	−	−	−	+	+	+
1-4,000	−	−	−	−	−	+	+	+
1-5,700	−	−	−	−	−	+	+	+
1-8,000	−	−	−	−	−	+	+	+
1-10,000	+	−	−	−	−	+	+	+
1-15,000	+	+	−	−	−	+	+	+
1-20,000	+	+	+	+	−	+	+	+
1-40,000	+	+	+	+	+	+	+	+
1-80,000	+	+	+	+	+	+	+	+

These experiments demonstrate that the cholera vibrio is more resistant to alkalies than most organisms, and that it is particularly susceptible to the action of acids and many aniline dyes. The results obtained with brilliant green are the most extraordinary of all the chemicals which I have tested up to the present date.

Isolation of the Organism.

Many alkaline media have been used for the isolation of the vibrio, and the best known of these is Dieudonne's alkaline serum agar. These media possess disadvantages, for when vibrios are scantily present in the inoculated material their growth is inhibited, and there is a tendency for the characteristic curve of the vibrio to be lost. Recently I have used media prepared with calcium oxide, and this eliminates these disadvantages.

An excellent medium for subcultures of the vibrio is prepared by saturating nutrient agar with lime, filtering, and then carbon dioxide is bubbled through the medium, and most of the lime is precipitated as calcium carbonate. When this medium is filtered again it will be found alkaline to litmus, even after carbon dioxide has been passed through it for one hour. The vibrio grows very luxuriantly upon this medium.

The following selected from a number of similar experiments is a method of isolating this organism when it is present in high dilution.

Three litres of unboiled tap-water were placed in a flask and about 50 gm. of a normal stool and five broth cultures of certain fæcal organisms, including *B. coli communis* and *B. acidi lactici*, were added to this. Of a 24-hour-old culture of *Vibrio choleræ* 1 c.c. was diluted with 999 c.c. of tap-water and thoroughly shaken, 1 c.c. of this dilution of 1 in 1000 was diluted with 99 c.c. of tap-water; this gave a final dilution of 1 in 100,000, of which 1 c.c. was added to the flask. Calcium oxide 1·2 gm. and 30 gm. of Witte's peptone were placed in the flask. A pellicle formation appeared on the surface of the fluid in two days, and this was found to consist principally of cholera vibrios from which a pure culture was obtained.

Another method of isolating the vibrio from the excreta of patients consists in placing 5 c.c. of the excreta into three test-tubes and titrating with a soda solution of known strength until these tubes contain 3·2, 3·5, and 3·75 per cent. of normal caustic soda. At the expiration of an hour when the alkali will have destroyed many of the normal fæcal organisms, the contents of these tubes are poured into separate flasks of peptone water and in this a culture of vibrios rapidly develops.

Several points of practical significance depend upon the susceptibility to acids of the cholera vibrio.

The stools from patients suffering with cholera rapidly undergo acid fermentation, and this is due purely to the presence of a quantity of undigested food material. A favourite method of submitting a specimen for examination from a post-mortem is to allow the intestinal contents to flow into a loop of intestine which is then ligatured, removed from the body, and forwarded to the laboratory; an acid fermentation takes place in this loop of intestine even more rapidly than in a rice-water stool.

I have received specimens for examination which have possessed an acidity up to 0·396 per cent. lactic acid equivalent. In several cases these have been tested by sterilising and then inoculating with the *Vibrio choleræ*, and the organism has died out in a short time. Specimens having an acidity above 0·25 per cent. lactic acid equivalent have proved to be valueless for examination. But the organism has been isolated from intestinal and fæcal particles in a pabulum of 0·2 per cent. lactic acid equivalent by first neutralising the acidity and then breaking up all solid particles with a glass rod.

The relative amounts of acidity produced in lactose or glucose media by the cholera vibrio and the commoner fæcal organisms are shown in Chart XIX.

CHART XIX.

Acidity reckoned as lactic acid produced—	*V. choleræ.*	*B. coli communis*	*B. Gunthral.*	*B. acidi lactici* organisms
In 48 hours in 3% lactose media...	0·098%	0·207%	0·208%	0·163%
In 10 days in 3% glucose media...	0·104%	0·261%	0·256%	0·241%

Much of this acidity certainly is not due to free acids, such as lactic acid.

A number of fæcal organisms were grown for 24 hours in tubes of glucose broth. These cultures were sterilised at 70° C., and each was divided into two portions, one of which

was rendered neutral to litmus; these portions were inoculated with *Vibrio choleræ*; in every case the result was the same; the tubes which were not neutralised were sterile when tested after 24 hours, whereas in those which had been neutralised there was a growth of *Vibrio choleræ*. Thus the acidity produced by fæcal organisms destroys the vibrio, but the other products of these bacteria do not prevent the rapid growth of this organism.

Calcium carbonate is the best antacid to prevent the destruction of the *Vibrio choleræ* in excreta, and one or two drachms of this substance should be added to stools which are forwarded for bacteriological examination.

Treatment.

It would appear that the administration of acids was indicated in the treatment of cholera. And theoretically the administration of the lactic acid or the products of fermented milk should give excellent results.

Substances which usually are taken in with the food or are produced in the intestinal tract are easily dealt with by the animal or human economy. A large number of experiments were carried out on rabbits and guinea-pigs in an attempt to render acid the contents of the duodenum, jejunum, and higher parts of the ileum.

Quantities of diluted lactic or butyric acid or soured milk were passed into the stomachs of these animals, and they were killed at variable times, ranging from five minutes to six hours after the administration of the acid, and in every case the contents were alkaline. Only in those cases in which such large quantities of acids were administered as to excoriate the mucosa were the contents of the duodenum acid, and even then this acidity did not extend to the contents of the jejunum.

These experiments were repeated with dogs and it was found that the contents of the small intestine of the common pariah dog are frequently faintly acid, and this degree of acidity cannot be increased by the administration of acids.

It would seem impossible for this organism to survive in the acid contents of the stomach and reach the alkaline media of the small intestines, unless it were very intimately mixed with solid particles of food, such as fats, which are not penetrated by the acid of the stomach.

There is circumstantial evidence that the primary intracorporeal development of the organism takes place in the alkaline pabulum of the mouth and œsophagus; this is supported by the fact that in many patients suffering with cholera a large number of the vibrios can be found in the pharynx and in the œsophagus. This may explain many of the vagaries of the disease.

In considering the action of brilliant green and crystal violet upon the vibrio the question at once suggests itself: Is it feasible to administer these substances to patients for the purpose of destroying or inhibiting the growth of vibrio in the intestine? I have carried out many experiments to test the action of these chemicals.

Brilliant green, 4 c.c. of a 1 per cent. solution, was injected subcutaneously into the abdominal wall of a guinea-pig which weighed 390 gm. The animal showed no signs of general ill-health and was killed after 24 hours. An incision was made over the site of injection and the subcutaneous tissue was stained green and was very œdematous.

Two other guinea-pigs were injected with 3 c.c. of a 1 per cent. solution of brilliant green, and large sloughs formed and separated at the site of injection, and the process of healing was very tedious, but both animals were alive and well four months after the injection.

Rabbits may be inoculated intravenously with 0·25 c.c. of 1 per cent. brilliant green for each 1000 gm. weight; larger doses than this usually kill the rabbits.

When the drug is administered to guinea-pigs by the mouth it produces inflammation of the gastric and duodenal mucosa and intense congestion of the liver. It is not readily destroyed by the acid of the gastric juice, and a large portion of the dye administered passes to the small intestine.

Doses of 1/5 grain can be administered to dogs without producing poisonous symptoms, and when it is administered in a bolus of suet coated with keratin, and the animal is killed two hours after the administration, the presence of the green dye can be demonstrated in the intestinal contents by neutralising them with an acid.

Further animal experiments are proceeding before testing this chemical upon patients suffering from cholera.

THREE stained-glass windows have been recently placed in St. Andrew's Church, Redruth, Cornwall, as a memorial to the late Dr. Arthur Edward Permewan. The entire cost was defrayed by public subscriptions.

NORMAL GUN-DEAFNESS.

BY T. B. JOBSON, M.D. DUB.

IT is well known that exposure to gun-fire may cause deafness. Oft-repeated loud noises will produce lessened acuity of hearing. In previous wars it has been noticed that a small proportion of those exposed to gun-fire showed signs of deafness, so it occurred to me that it would be of some interest and use to find out what proportion of soldiers exposed to gun-fire go deaf, to measure, as far as possible, the amount such deafness produced in a *previously healthy ear*, to ascertain whether this deafness is temporary or permanent, and to investigate the type of deafness so produced.

With these objects in view I examined a large number of soldiers who were in hospital for various wounds. All who did not show an interval of at least four months from date of exposure were excluded. Seventy-three showing this interval were examined. Of these all giving a history of previous ear trouble were ruled out, and also all those who showed severe nerve symptoms, fractured skull, abnormalities of nose or throat that would cause deafness or whose membranes showed signs of old otitis media or other abnormality. The patients examined were Germans, and I must say they proved very intelligent subjects.

To get anything like correct results with tuning-fork tests the patient must concentrate on the subject and help the investigator all he can. A few remarks on tuning-fork testing may not be amiss here. After trying forks of different wave-lengths I decided to use C 2, which gives 512 double vibrations. The lower forks take much longer before the sound ceases, and although the lengthened period gives increased accuracy in judging the moment at which the fork is no longer heard the patient gets tired of concentrating for so long, and as the inquiry proceeds his answers get less accurate. The higher forks are heard for such short periods that no accurate results could be obtained in an investigation of this kind. No particular alteration of the tone limit was found, so the comparative tests were all done with the C 2 fork. The men were tested by conversation as well, but the comparative results are difficult to obtain in small amounts of deafness. The large majority—over 80 per cent.—were quite unaware of being deaf at all. This I have noticed over and over again in English soldiers, but on examination never failed to find some definite amount of deafness.

The following are the details of the cases examined:—Total examined, 73. Thirteen cases were excluded for the following reasons: For old suppurative otitis media, 8; nasal obstruction, 1; enlarged tonsils, 2; head injury, 1; otorrhœa, 1.

The conditions of the membranes in the 60 accepted cases were as follows: Normal, 37; dull, 16; retracted, 3; increased mobility, 2; cerumen removed, 2.

The average age was 28. Length of exposure to gun fire: a few hours to several months. Intervals since exposed: four to six months.

The type of deafness is a fairly definite one—mixed obstructive and nerve deafness. In some cases hearing was normal in one ear, but in no case was hearing perfect in both. The right ear was deafer than the left in the majority of cases. The time of audibility of the C 2 fork at the meatus as compared with normal controls showed a reduction varying from 2 to 27 seconds, the average being −11·4 seconds for right and −8·4 seconds for left. Bone conduction showed a very similar reduction—viz., −3·7 seconds for right and −3·4 seconds for left.

A good many of the cases gave a history of severe or complete deafness for one or more days after exposure in a big "strafe," but almost invariably said they could now hear quite well. The cases were all infantry men, who would not be so close to big-gun fire as the artillery. On some future occasion I hope to examine some gunners and ascertain if their acquired deafness is more severe.

From this investigation I fear it may be concluded that exposure to gun-fire in the present war often produces rapidly a permanent deafness. This normal—if I may so call it—gun-deafness is of a very definite type—a mixed obstructive and nerve deafness. The amount of deafness as shown by a C 2 fork is about −10 seconds aerial conduction and −4 seconds of bone conduction.

A CASE OF TRAUMATIC RUPTURE OF THE HEART.

BY G. R. TURNER, C.B., F.R.C.S. ENG.,
TEMPORARY SURGEON-GENERAL, R.N.;
AND
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TEMPORARY SURGEON, R.N.

THE following case of traumatic rupture of the heart—an injury which has been reported in medical literature on only 5 occasions—appears worthy of record.

Mr. G. F., chief boatswain, aged 47, was leaning over the rail of his ship directing mooring operations when the rail carried away and he fell a distance of some 20 feet on to a buoy, and from there into a cutter lying alongside. When picked up he was unconscious, but beyond small lacerated wounds of the chin and tongue no external injury was found. He was transferred at once to the Royal Naval Hospital at Plymouth. When seen on admission, an hour and a half after the accident, he was unconscious and was in a state of cerebral irritation, shouting out loudly, moving his limbs convulsively, and resenting all interference. The pupils were dilated and did not react to light. There was no bleeding from nose or ears and no paralysis. The extremities were pale and cold, and the radial pulse was impalpable, while the heart sounds were noted to be distant and feeble. There was no bruising of the chest wall, and examination revealed no sign of injury other than the small wounds of the face and mouth, and an abrasion of the scalp over the vertex, and bruising round both hips.

During the next few hours his condition steadily improved, and when seen at 7 P.M., five hours after admission, he was conscious and rational. He lay quietly in bed, and answered questions intelligently; he complained of some abdominal pain, but made no other complaint. His colour had improved, and the extremities were now warm, but the radial pulse was still impalpable, and the heart's action rapid and feeble.

A few minutes later the sister, on returning to the patient's room, found him lying on his side, unconscious, livid, and breathing stertorously, and within three minutes he was dead. Immediately before death his eyes protruded abnormally, and his head and neck were intensely engorged and cyanosed. A post-mortem examination was made the following day.

The cranium was undamaged. There was excess of cerebro-spinal fluid at the base of the brain, the cerebral veins were congested, and there was œdema of the brain, but there was no gross injury. There was a fracture of the first segment of the gladiolus of the sternum, running obliquely downwards from right to left. The periosteum over the anterior surface was not torn and there was no superficial ecchymosis, but the periosteum of the deeper surface was torn—evidently by the jagged edge of the fracture—and there was a small extravasation of blood into the anterior mediastinum. The pericardial cavity was distended and appeared blue, and on incising it 15 oz. of dark blood were evacuated. After mopping this away a small tear was found in the anterior wall of the right ventricle, close to the semilunar valves, large enough to admit a lead pencil into the cavity of the ventricle. There was a small bruise, but no tear of the parietal pericardium immediately in front of this, and the position of the rupture closely corresponded with the position of the left edge of the fracture of the sternum. The right side of the heart was collapsed and empty. The cardiac wall appeared to be healthy and of normal thickness, and there was no fatty infiltration. There was no other gross lesion of the thoracic or abdominal viscera, and no other fracture.

FIG. 1.



Interior surface of the fractured sternum showing jagged edge, A.

The diagrams (Figs. 1 and 2), kindly drawn by Mr. H. S. Holden, temporary bacteriologist to the R.N. Hospital, Plymouth, show the position of the fracture and of the rupture of the heart muscle.

The following facts about the case call for comment.

1. The injury was probably due to indirect violence, as there was no bruising of the chest wall. It is presumed that the man fell on his head, and that the fracture was caused by sudden acute flexion of the dorsal spine, a mechanism which is known frequently to cause a fracture at the junction of the manubrium and gladiolus.

2. It is noteworthy that the parietal pericardium was untorn, permitting the sudden distension of the pericardium, and death from compression of the right side of the heart.

3. The length of time that the patient lived after the accident can be explained by assuming, either that the rupture occurred at the time of the accident, and became temporarily obliterated by a clot, or that the rupture did not occur until immediately before death, when a movement of the patient in bed displaced the upper fragment of the sternum backwards into the heart. The first of these hypotheses seems more likely to be correct. The fragments would be naturally kept in place owing to the anterior periosteum being intact, and it is improbable that any voluntary movement of the patient in bed would be sufficient to drive the sternum backwards with sufficient force to rupture the heart. Moreover, the absence of the radial pulse and the extreme weakness and rapidity of the heart's action throughout suggest that there was an initial small hæmopericardium, which became later increased by the dislodgment of a clot. Corin [1] records a similar case which survived six days. O'Neill [2] records the case of a boy who fell down and was stamped on. He was kept in bed for two days and was then allowed up in the absence of severe symptoms, remained apparently well for four days, and died suddenly in bed on the following day. The necropsy revealed a hæmopericardium, and a slit 3 mm. long at the auriculo-ventricular valve. In this case there was no fracture, but it was indubitable that the rupture occurred at the moment of injury, and became temporarily occluded.

4. In the absence of any local bruising or obvious crepitus the fracture was entirely overlooked, and the correct diagnosis was not entertained before death.

FIG. 2.

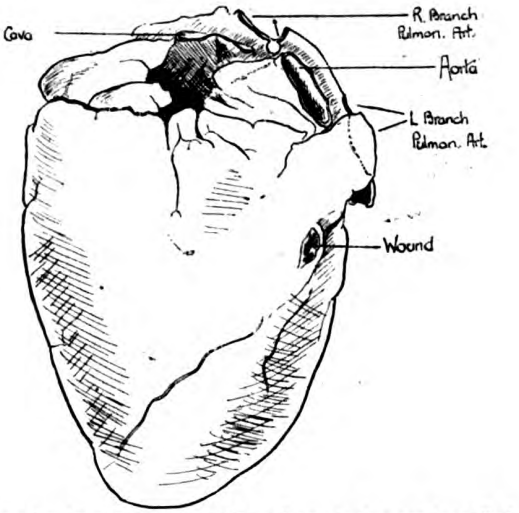


Diagram showing the position of the small tear in the anterior wall of the right ventricle.

[1] Corin: Bulletin de l'Acad. Royale de Belgique; 4me. série, 1911, p. 562.

[2] O'Neill: Journ. Amer. Med. Assoc., 1914, vol. xii., p. 697.

BRISTOL HOSPITALS AND THEIR FINANCE.—The medical report read at the half-yearly meeting of the governors of the Bristol General Hospital showed an increase in the number of in-patients, while 50 beds had been placed at the disposal of the military authorities. The financial report for the past six months was satisfactory.—At the meeting of the governors of the Bristol Royal Infirmary the daily average number of in-patients was reported to be 487 and the out-patients 30,694. The financial statement showed a deficit on the six months of £4968, making a total adverse balance of indebtedness against the institution of nearly £20,000.

GASTRIC DIGESTION OF VARIOUS FOODSTUFFS AFTER GASTRO-ENTEROSTOMY.

BY A. A. WOLKOFF,
AND
E. E. KLOPFER.

A Preliminary Note from the Pathological Laboratory of the Institute of Experimental Medicine, Petrograd (Director, E. S. LONDON).

THIS paper is but a link in the chain of investigations which are being carried out in Dr. E. London's laboratories, an account of which will be found in his book "The Physiology and Pathology of Digestion" (Petrograd, 1916). In the course of time more detailed statements will be made concerning the experiments which we have performed.

Gastric Evacuation after Gastro-enterostomy.

Under ordinary circumstances the movements of the stomach are directed towards pushing the gastric contents, the chyme, through the pylorus. When an artificial opening is made between the stomach and intestine the manner of evacuation is altered in accordance with circumstances. In such cases the state of the pylorus is of paramount importance. If it is quite closed, then the evacuation of the chyme must be effected through the anastomotic opening. If, on the other hand, the pylorus is quite passable the function of the anastomosis is more doubtful, though as yet no absolutely conclusive experiments have been made on this point. Existing experiments incline us to the view that when the pylorus is narrowed but is still passable the gastro-entero-anastomotic opening does not function.

No doubt the position of the anastomosis is of some importance in this connexion; doubtless its size, direction, &c., play a part also. When employed on such investigations the research workers of the clinic usually use the Roentgen rays and opaque meal as the means of experiment. But this method cannot compare for scientific accuracy with the making of fistulæ and direct observation on the outflow. The shadows of the skiagram are often indistinct, and this method can give us no information as to the chemical composition of the evacuated food. Only the fistulæ method can give an answer to all the questions which arise. The following points are in need of elucidation: (1) Is a joint working of both outlets—i.e., pylorus and gastro-entero-anastomosis—possible? and, if so, (2) is the emptying of the stomach accomplished through both outlets simultaneously or at different times? (3) if the evacuation takes place at different times, does it conform to some definite law? (4) does the chyme which comes from one outlet differ from that which comes from the other when different foods, such as milk, meat, &c., are administered?

Besides the purely practical importance of such an investigation—practical in view of the increasing application of the operation of gastro-enterostomy—this research has considerable theoretical interest, for by such experiments as these we can best determine the mode of gastric evacuation. The best procedure is this: Various dogs with identical gastro-intestinal anastomoses are taken and their pyloruses are narrowed in various degrees. With the help of a fistula distal to the pylorus and another distal to the gastro-entero-anastomotic opening we are able to study the passage of foodstuffs by both parts. It must be admitted that such a set of protocols are difficult to obtain, because it is very difficult to cause a certain and constant narrowing or even obliteration of the pylorus. Of late the fascial ligature has been much employed.[1]

Our experiments on dogs with experimental fistulæ have convinced us that the fascial ligature of the pylorus, however tightly it may be applied, has no power to close the outlet of the stomach entirely. The ligature does not answer the purpose, even when a strong silk ligature is put over the fascial one. In fact, we have no mechanical contrivance by means of which a complete and definite closure of the pylorus can be effected. The activity of the emptying stomach is so strong and is effected so directly against the pylorus that a very small opening will be made use of by the stomach. Clinicians often hold other views based on skiagrams, for there are cases where a year or so after the application of the fascial ligature the X ray shows evacuation of the stomach only by way of anastomosis. However, roentgenographical shadows may easily give inexact information. In one of our dogs, which had a narrowed pylorus and a wide gastro-enterostomy, minced meat passed both ways, whilst the more compact undigested parts found their way through the anastomosis. Now bismuth, which produces the skiagraphic shadows, is evacuated through the gastro-enterostomy as an indissoluble part of the gastric contents. It does not pass at all through the pylorus, and if it does then in a greatly diluted state, so that the shadows of the food which has gone through the pylorus are either invisible or very indistinct. Under such conditions the X ray fails to give an accurate rendering of the manner of gastric evacuation.

Results of Experimental Investigation.

The following remarks concern a dog which had been subjected to three successive operations:—

A duodenal fistula was made on Oct. 23rd, 1913. When this wound was healed the pylorus was closed with a thick ligature, over which a piece of fascia taken from the dog's own thigh was tied and sewn. This fascial band was peritonealised and an anastomosis was made between the pyloric portion of the stomach and the first loop of the jejunum (gastro-enterostomy antecolica). Below this a Braun's anastomosis was made between duodenum and jejunum to prevent a vicious circle. Onwards from the fourth day after the operation the dog was put into a stand and there received either milk (100, 150, 200 c.c.), or meat (200 gm.), or bread (200, 150 gm.). At first only duodenal juices, a brownish-yellow transparent fluid of alkaline reaction, escaped from the duodenal fistula. No food came away; the pyloric ligature evidently was successful. But on the seventeenth day after operation acid drops and streamlets of gastric origin appeared mingled with the duodenal secretion. On switching on the light in the vault of

TABLE I.—*Dog, "Bielka," on which the following Operations have been Performed: Gastro-enterostomy Antecolica with Braun's Entero-entero-anastomosis, Ligature of the Pylorus. Formations of Fistulæ on the Duodenum and Jejunum. 200 gm. of Minced Meat have been given.*

No. of experiment and date.	How long after feeding the chyme was obtained.	The duration of obtaining the chyme.	The quantity of chyme in c.c.	Analysis of the separated portions of chyme in grammes.				
				Nitrogen.				
				Non-coagulable.	Coagulable.	Total.	Sugar	Fat
1914.	h. m.	h. m.			%			
1. 20/1	0 5	2 0	90	0·44	0·88 = 61	1·32	—	—
2. 24/1	2 23	1 0	35	0·25	0·38 = 62	0·63	—	—
3 7/2	3 12	1 0	43	0·63	0·70 = 52	1·33	—	—
5. 11/3	0 8	0 55	50	0·34	0·35 = 51	0·69	—	—
10. 14/3	0 5	2 0	55	0 33	Material collected but not yet examined.			
11. 19/3	0 20	2 0	50	0 33				
17. 1/5	0 1	1 13	15	0·15				

TABLE II.—*The Same Dog. 200 c.c. of Milk have been given.*

4. 12/2	1 0	1 0	210	0·31	0·09 = 22	0 40	4·85	—
6. 25/2	1 0	1 30	110	0·10	0·02 = 17	0·12	1·16	—
7. 28/2	1 5	1 15	85	0·09	0·03 = 25	0·12	0·80	—
12. 23/3	1 0	1 0	130	0·06?	0·23	0·29	1·54	—
15. 19/4	1 27	1 0	50	0·11	0·12 = 52	0·23	0·53	—
21. 22/5	1 0	1 0	45	0·09	0·14 = 61	0·23	1·28	—

TABLE III.—*The Same Dog. 50 gm. of Beef-fat or 200 gm. of Cream, or 90–93–100 gm. of Table Butter Stained with Scharlach Red have been Administered.*

14. 15/4	1 0	2 0	38	—	0·08	—	—	0·15
25. 6/6		1 0	60	0·07	—	—	1·296	—
26 12/6		2 30	74	—	—	—	—	7·56
27. 16/6		2 0	85	—	—	—	—	—
28. 19/6		2 0	49	—	—	—	—	—

TABLE IV.—*The Same Dog. 100 gm. of White Bread and 100 c.c. of Milk have been given.*

8. 4/3	1 0	1 30	15	0·53	0·56	1·09	1·18	—
9. 7/3	1 35	1 24	115	0·16	—	—	5·85	—

TABLE V.—*The Dog "Moska," operated in the same way as Dog "Bielka." 200 gm. of Minced Meat have been given.*

18. 3/5	1 0	0 55	12	0·38	—	—	—	—
24. 29/5		1 0	6·5	—	—	0·09	—	—
29. 23/6		2 0	25	—	—	—	—	—

[1] R. Kornieff and W. Shaak: The Ligature of the Pylorus and the Exclusion of the Pyloric Part of the Stomach by means of Strips of Freely-transplanted Fascia. Reports of the Thirteenth Congress of Russian Surgeons, Petrograd, 1913, p. 188.

the cannula these acid secretions could plainly be seen coming from the oral side. The secretions were collected and analysed. After the seventeenth day the analysis proved that when milk was given to the dog the fluid collected from the duodenum contained sugar. The sugar estimation was performed by Bertrand's method of analysis. We came to the conclusion that the sugar was probably lactose. When meat was fed to the dog the duodenal juice showed very clearly the biuret reaction. As the pylorus was certainly now open again in spite of our ligature, it was necessary to find out whether the gastro-enterostomy was still working. It could be surmised, *a priori*, that once the pylorus had opened its functional activity would increase in the course of time, whilst most probably the activity of the gastro-enterostomy would decrease in proportion. Clinicians are of the opinion that the anastomosis would in this case become closed. To clear up these questions we resolved to make a second fistula (a jejunostomy) below the entero-anastomosis. If during the emptying of the stomach the duodenal fistula is kept wide open only such food as has escaped through the gastro-jejunostomy will be found in the jejunal fistula. The jejunostomy was accordingly performed and it was found that the food left the stomach by both parts—the old natural way by the pylorus and also by the gastro-jejunostomy. Our investigations showed, however, a difference in the character of the food which escaped by the two orifices, for the more liquid parts (milk, beef-juice) passed through the pylorus, whilst the more solid constituents (such as minced beef) came from the jejunal fistula.

The work at this point was interrupted by the war, but will be resumed as soon as possible. In the course of time more detailed statements will be made concerning the experiments which we have performed, as well as an account given of our further researches on the points enumerated above.

In conclusion, it is a pleasant duty to express our thanks to Dr. E. S. London for the suggestion contained in this thesis, as well as for his constant direction during the execution of this work.

A CASE OF COMPOUND FRACTURE OF THE PATELLA TREATED BY WIRING:

COMPLETE FUNCTIONAL RECOVERY.

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THE following account of an unusual case is given in the hope that it may prove of interest.

G. K., a Mahommedan, aged 20, was admitted to the Cantonment General Hospital, Agra, under my care, on Nov. 4th, 1916, at 3 A.M.; for "wound of knee." The history was that on the previous night he had taken part in a Moharram procession and was indulging in the display of sword-play customary on these occasions. The sword-hilt turned in his hand and the edge of the weapon struck the upper part of his left knee; the leg immediately gave way under him completely and he fell to the ground. On admission the wound was at once thoroughly washed with antiseptic lotion by the subassistant surgeon in charge, the wound dressed, and the limb put on a back-splint.

I saw the patient late on the same day, and, on examination, confirmed the diagnosis of compound fracture of the left patella, but it was then too late, with the limited lighting facilities, to attempt any operative measures. Treatment was confined to the injection of 1500 units of antitetanic serum.

Those readers of THE LANCET who are familiar with the resources of the average Cantonment Hospital in India, both as regards the possibility of aseptic surgery and skilled assistance, will appreciate my difficulty in deciding on the line of treatment. However, I reflected that I might as well try wiring, since ankylosis was almost certain to occur if the limb escaped amputation, a result which might be improved by wiring, and could not very well be made worse. Accordingly, on Nov. 5th the patient was anæsthetised, and a thorough examination of the wound was made to gauge the chance of successful wiring.

With the leg in the extended position, on the splint, the wound, a wide obtuse angle, lay with the apex of the obtuse angle just above what would have been in a normal limb the mid-patellar point, extending internally half an inch beyond the internal patellar margin, while externally it reached a point one inch beyond the outer margin of that bone. On opening up the wound to inspect the fragments it was seen that the sword must have impinged on the upper border of the bone, for the whole of the anterior compact layer and the lower third of the entire bone formed the lower fragment, while the upper was formed by the upper two-thirds of the articular surface, with the central cancellous tissue. This curious solution of continuity is roughly shown in the accompanying figure. The sword must have struck the knee when the latter was partially flexed, caught the patella on its upper edge, and cut cleanly down the upper two-thirds and broken off the lower third.

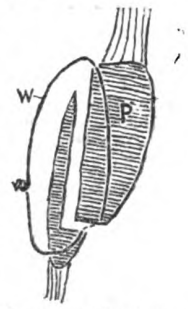


Diagram of fracture of patella (P) seen in longitudinal section. The thick line shows the position of silver wire (W) in the fragments.

It appeared to me that the shape of the fragments admitted a reasonable hope of successful wiring, and that if one could prevent or control suppuration there was hope of the patient being left with a leg which, if not functionally perfect, would at least be of more use to him than an amputation stump. Accordingly the ordinary horse-shoe incision was made, joining up with the outer end of the wound externally, but half an inch internal to its inner end on the inside of the knee. The resulting flap was turned down and the fragments exposed. The joint was then cleared of blood-clot and washed out with 1 in 2000 perchloride of mercury, followed by thorough irrigation with normal saline. The fragments were then drilled in the position and direction shown by the line in the figure, a stout silver wire passed, and the fragments securely fastened together. The cut capsule of the joint was united by interrupted catgut sutures, as was the periosteum over the anterior surface of the patella, a rubber drainage-tube being inserted into the joint cavity, externally and internally. The remainder of the operation wound was closed by interrupted salmon-gut stitches. The edges of the sword wound were then pared with scissors, and united also by interrupted salmon-gut sutures. Dressings were applied and a back splint, and the patient was returned to bed. As soon as he came round from the anæsthetic weight and pulley extension was applied to the leg.

On the next day the patient's temperature was 101° F., and my hopes for a good result fell almost to zero, but on changing the tubes I was relieved to find that, while there was plentiful discharge of serum and synovial fluid, nothing like pus could be noticed on the gauze or irrigated out of the joint. The latter was thoroughly washed through with a hypertonic mixture of sodium citrate and saline, the tubes replaced, dressing reapplied, and the patient returned to bed. A notable feature of the dressing, not only on this first day, but throughout the case, was its freedom from pain; the patient, who was very nervous, assuring me after each sitting that he had not been once seriously hurt.

The above procedure of dressing was repeated twice daily till Nov. 22nd, when the evening temperature, after a steady decline, reached normal, the discharge remaining serous. From this date it was performed daily till the wound healed. Tubes were removed on Dec. 4th and replaced by gauze drains, which in turn were rapidly replaced by drains formed of silkworm gut. On Dec. 23rd the sinuses had completely healed and massage was started.

On Jan. 5th, 1917, the patient was discharged, at his own request, to attend as an out-patient for massage, and I saw him for the last time on the day before I left Agra on service, Jan. 17th, when he was able to walk well with a stick, and could bend his knee to less than a right angle without pain. My successor, Major H. T. Stack, R.A.M.C., has kindly kept track of the case for me, and to him I am indebted for the information that when seen on March 11th this patient could walk and run, and that on May 13th he was able to squat, native-fashion, on his heels, and sit cross-legged all day at his work, boot-making. This has been the test of cure that I set myself, for if a man can squat and sit cross-legged there cannot be much wrong with his knee-joint, and I am informed that there is no appreciable functional or visible difference between the two lower limbs.

Throughout the operation and the subsequent dressings, as far as local conditions permitted, the strictest aseptic precautions were maintained. The wound was handled as little as possible with the instruments available, and no instrument touched the wound a second time that had not meanwhile been re-sterilised. I consider that the patient owes the fact that he has a perfectly useful knee to this procedure, to the undoubted resistance possessed by the native of India to infection which would kill a European, and, above all, to the unremitting care and attention of Civil Subassistant Surgeon Hamid Hasan Khan. The latter throughout the entire case performed the combined duties of house surgeon, dresser, and nurse with an energy and attention that never flagged.

Kerman, Persia.

THE SURGING GALVANIC CURRENT IN THE TREATMENT OF PARALYSIS.

A SIMPLE METHOD OF LOCALISING CONTRACTION TO PARALYSED MUSCLES.

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IN the electrical treatment of paralysis it is necessary to prevent any stretching of the paralysed muscles. And in the opinion of many it is essential that the paralysed muscles should be made to contract and relax during the treatment. The various electric currents, if applied in the customary ways by means of electrodes placed on the limb or in water immersing the limb, will cause contraction of the healthy muscles whatever the condition of the paralysed muscles may be. Such contraction usually overpowers the latter and stretches them. When the paralysis is caused by nerve injury and the muscles show reaction of degeneration, the faradic and sinusoidal currents will not cause any contraction of the muscles supplied by the injured nerve. On the other hand, the antagonists, if healthy, will contract and cause passive stretching of the paralysed group. The galvanic current will, at make, cause a slow contraction of the muscles showing R.D., but such contraction is accompanied by a brisk twitch of the healthy antagonists. The paralysed muscles will therefore be stretched before each contraction, because their latent period is longer than that of healthy muscles.

If the galvanic current is applied, not with *sudden* rise to full strength and equally abrupt fall to zero as in the customary way, but with a more *gradual* increase of strength to maximum and equally slow fall to zero, and if at the same time it is made to flow longitudinally through the muscles along the direction of the fibres, contraction will then be produced only in the paralysed muscles with R.D., not in the healthy muscles. A galvanic current that is made to surge in this way will therefore cause contraction of the paralysed group and stretching of the healthy antagonists. An additional advantage attending the use of the surging galvanic current is that the limbs requiring treatment can, in many cases, be immersed in warm water without any support other than that afforded by the bottom of the receptacle in which the limb rests. By immersion in water the maximum strength of current can be borne with the minimum discomfort, and, further, the other tissues of the limb receive stimulation and an increased supply of blood, both of which, in the opinion of the author, play an important part in the electrical treatment of paralysis. Any stimulation of the normal antagonist muscles of the limb is an advantage, provided that it does not cause them to contract sufficiently to overpower and stretch the paralysed group, because the former are deprived of much of their exercise when they receive no opposition and at the same time cannot shorten owing to fixation of the joint by splints in the intervals between treatment.

Apparatus for the production of the surging galvanic current.—Some device that will allow quick or slow increase and decrease of the current in either direction is required. Further, if the current is derived from the main, a rheostat and resistance lamps are necessary. The water rheostats in use in the electrical department at the First London General Hospital and St. Bartholomew's serve the second requirement admirably. They allow the finest and most perfect gradation of the current and they cost very little. To produce the surging the same water rheostats can be used, but some modification is necessary for the most effective work. The apparatus known as the "Galvanoset," made by the Medical Supply Association, can be used for the purpose, but the milliampèremeter attached to it is not really necessary, and adds considerably to its cost. The writer has devised a simpler form of water rheostat which serves both requirements satisfactorily. It is being made by the Medical Supply Association. The principle of the water rheostat (which was originally introduced from France) may be briefly described.

A cylindrical glass or china vessel is filled with tap water; 8 inches in diameter and 4 inches in depth is a suitable size. Two carbon rods, 6 inches long, are placed vertically in the water at opposite ends (say one at north and the other at south). The current from the main is made to traverse the water from one carbon to the other. The current to the patient is led off from the water by means of two other carbons, which also dip vertically into the water at the circumference, one at west, the other at east. In this position no current flows to the patient. But if the two latter carbons are moved around the circumference, one from west to south, the other from east to north, a current will pass to the patient, its strength gradually increasing the further the carbons are moved around the circumference. If the carbons are moved in the opposite direction—viz., one from west to north, the other from east to south—the direction of the current to the patient will now be reversed. The advantages of this form of rheostat are the perfectly even gradation of strength of the current, the ease with which it can be reversed, the safety to the patient, and its simplicity. The movement of the carbons is easily effected by means of their attachment to a bar that rotates horizontally above the glass bowl, with its centre corresponding to the vertical axis of the latter. The rotation is best effected by hand by means of a small milled-edge disc attached to the centre of the horizontal bar. This method is adopted in the new model of rheostat devised by the writer. By rotating the disc between the fingers and thumb the current passing to the patient can be made to increase and decrease, rapidly or slowly as desired, and in either direction.

Application of the current to the body.—To apply the current to the limbs, say the upper extremities, the forearms are immersed in the arm receptacles of the Schnee bath, each forearm in a separate receptacle. The electrodes are placed in the water at the ends occupied by the fingers (not at the ends occupied by the elbows) so as to ensure the passage of the current longitudinally through the muscles. If the lower limbs require treatment the legs are immersed in the appropriate receptacles. The electrodes, however, should take the form of metal discs with vertical rods attached to them. The discs rest on the bottom of the receptacles and the vertical metal rods are covered by rubber tubing where they are in contact with the water. Such an arrangement ensures the longitudinal flow of the current through the legs. With the ordinary electrodes the current may pass out of the legs to the electrodes in a transverse or oblique direction. The current is now made to surge between zero and the maximum desired. If the muscles are healthy they will not contract whether the surging is quick or slow. If the current is made to reach a great intensity—i.e., as strong as can be tolerated—some slight degree of contraction of the muscles may be noted. This is more often the case when the galvanic current supplied *to* the rheostat is not perfectly even and steady. When this current is derived from a motor transformer (as is usually the case when the current from the main is alternating) this unevenness is frequently observed. It does not seem to materially affect the action of the surging current when any of the muscles of the limbs are paralysed and show R.D. Suppose that this is the case with the extensors of the wrist. It will then be found that, as the current increases in strength, these muscles will contract and raise the wrist and hand. As the current falls to zero the muscles again relax. It is sometimes found that the best contraction of the paralysed muscles is produced when the surging current *descends* the limb—that is, flows from shoulder to hand. Sometimes the best contraction is seen when it flows in the opposite direction—i.e., when it *ascends*.

In one case it was noted that the paralysed group contracted first, and that as the current was further increased the healthy antagonists contracted and overpowered the paralysed group. It is therefore advisable, when beginning the treatment, to grasp the immersed wrist or ankle and note which current produces the best contraction of the paralysed muscles. Sometimes a quick rise from zero to maximum is required, as quick as can be effected by hand. Usually a much slower rise produces the necessary contraction.

In some cases the muscles with R.D. have greatly diminished excitability. A surging galvanic current that reaches a strength sufficient to cause contraction of these will usually cause a stronger contraction of the antagonists so that the former are overpowered and stretched. In these cases it is necessary to localise the current to the paralysed muscles. This can be done by removing the limb from the water and applying an electrode so as to cover the affected muscles

and causing the current to surge as before. It may even be necessary to localise the electrode to the peripheral end of the muscle so as to ensure the passage of the current in a *longitudinal* direction through the muscle. In one case of injury of the external popliteal nerve and paralysis of all the muscles supplied, with R.D., it was noted that when the *leg* was immersed the surging galvanic current caused contraction of the anterior tibial groups of muscles and raising of the foot. The peronei, which had a lower degree of excitability, did not contract until an electrode was placed over the lower half of the peronei. When the electrode covered the peronei *completely* it was noted that they did not contract, and when the current was further strengthened it spread to the anterior tibial muscles and caused contraction of this group.

The contraction produced by the surging galvanic current is quite different from the brisk twitch that follows a single excitation of a normal muscle. It is not a tetanus like that produced by rapidly repeated excitation of a normal muscle. And it is not like the sluggish contraction *and relaxation* following excitation of a muscle with R.D. by the make of a galvanic current. It, however, resembles the continuous contraction (the so-called "galvano-tonus") which is so often seen in muscles with R.D. during the period of flow of the galvanic current, especially during the earlier stages of the paralysis. This "galvano-tonic" contraction bears a closer superficial resemblance to the voluntary contraction than that produced by other artificial methods. "Galvano-tonus" can sometimes be produced in normal muscles when the current is strong.

The writer does not wish to make any statement regarding the relative value of the surging galvanic current and the others commonly used. The study of a large number of cases over a long period of time is necessary before any conclusion can be reached. The surging galvanic current can, however, localise contraction to the paralysed muscles; in two cases only, so far, has the writer found it to fail. In these the paralysed muscles had lost their excitability to faradic, galvanic, and sinusoidal currents applied with the maximum strength that could be tolerated by the patient. The method described has an additional advantage in that in a large proportion of cases, especially those that are fairly recent, the limbs can be immersed in water without the labour of applying electrodes or fixing supports to them.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF RUPTURED UTERUS WITH UNRUPTURED MEMBRANES.

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With Note by S. LEWIS GRAHAM, M.S. Lond., F.R.C.S. Eng.

THE following case is of interest on account, amongst her things, of its supposed rarity.

Mrs. A., aged 42, was admitted to the Women's Hospital, rmingham, on Sept. 8th, 1917, as an emergency case. The story was that her general health had been very good until e last three years, during which time she had suffered from ronic bronchitis. She had had 15 pregnancies in 20 years, being full-term. All previous labours were normal, and admission she was at the full term of her fifteenth egnancy. On the day before admission she was doing r ordinary housework until 6 P.M., when she commenced have cramp-like, indefinite pains in the abdomen. There s no vaginal loss and the patient did not think she was labour. The pains continued all night, and at 6 o'clock xt morning she sent for a midwife, who examined r and said she was not in labour but that she must call a doctor. At this time she had a sharp loss of bright blood. A local doctor came later in the morning l sent the patient into hospital. Until admission, at M., the pains had gradually become more severe and the ient felt very ill. Fœtal movements had been felt until day before admission. The condition on admission was follows. The patient was very fat and bronchitic. She looked ill and was collapsed. Temperature 98° F., pulse 130 and weak, breathing laboured and quicker than normal. The abdomen was the size of full-term pregnancy; it was painful and tender all over. Fœtal parts could not be made out definitely. (The abdominal wall was fat, and the placenta lay in front of the fœtus.) By the vagina there was some dark blood; the os felt thick, it was not on the stretch, and was about the size of a four-shilling-piece. The fœtal head was felt indistinctly a long way up.

An operation was performed by Mr. Lewis Graham. On opening the abdomen the maternal surface of the placenta presented immediately under the incision. The membranes were intact and contained the fœtus, cord, and liquor amnii. There was dark blood-clot in the abdominal cavity and the uterus was contracted down to the size of a coco-nut. It had a rupture along its upper border and was quite empty. The membranes were ruptured and the dead fœtus removed, which showed early maceration. The placenta and membranes were then removed and a subtotal hysterectomy performed. Blood-clot and liquor amnii were mopped out, and the abdomen was closed with a drain to the bottom of Douglas's pouch.

Pathological specimen: The uterus was quite contracted down, and in this condition the rent was 6 in. long. At the site of rupture the wall showed marked degeneration, and at its edge was no thicker than a sheet of paper.

The progress of the case was as follows: The abdominal condition was perfect. The patient had a sharp attack of pneumonia on Sept. 19th.

Note by Mr. LEWIS GRAHAM.

This is the third case I have had of rupture of the uterus with unruptured membranes and a dilated os. In two the rupture was complete and the fœtus and its appendages have been free in the abdominal cavity. In the third case the uterus had not quite ruptured through its whole thickness. In each case the patient has had a large number of pregnancies in rapid succession. This would appear to cause the uterine wall to give way under the tension exerted through the liquor amnii by the uterine contractions, but which tension is so slight as not to be able to cause rupture of the unsupported membranes at the external os. In the case here reported it would be most interesting to know exactly when the uterus ruptured and expelled the fœtus into the abdominal cavity.

A CASE OF ADENO-CARCINOMA OF THE APPENDIX.

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ACTING SURGEON, GLASGOW ROYAL INFIRMARY; CAPTAIN, R.A.M.C. (T.), NO. 4 SCOTTISH GENERAL HOSPITAL; CONSULTING SURGEON TO H.R.H. PRINCESS LOUISE SCOTTISH HOSPITAL FOR THE LIMBLESS, ERSKINE, ETC.

THE patient, a man aged 43, was admitted to the Glasgow Royal Infirmary under my care on May 24th, suffering from symptoms of acute appendicitis. He had been in good health until a week previous to admission, when he had severe pain in the right side of the abdomen, accompanied by sickness, vomiting, and giddiness. The pain gradually disappeared, but owing to a slight swelling on the right side, which persisted, he was sent into hospital.

On admission the patient had no pain, but there was a distinct tumour on the right side on the level of the umbilicus. Temperature 99·2° F., pulse 112, respirations 28. An immediate operation was performed, and the tumour was found to consist of matted omentum, in the midst of which lay what was at first taken for a loop of much inflamed and thickened small bowel. On investigation, however, the "bowel" was seen to be greatly thickened appendix, the removal of which presented no special features of interest. There was a considerable amount of purulent matter in the region of the mass, necessitating packing. Patient made an uneventful recovery.

Examination of the appendix after removal revealed a spherical white tumour, the size of a large marble, located in the proximal end, involving the greater part of the periphery of the wall of the appendix, and markedly blocking the lumen. The appendix beyond the tumour was much thicker than normal, and the lumen much distended. A microscopical examination of the tumour showed it to be of the nature of a papillomatous growth, with considerable inflammatory infiltration, while the deeper parts of the growth were adeno-carcinomatous. The tumour was almost confined to the mucous coat of the appendix.

Glasgow.

Mr. Samuel Craddock, M.R.C.S., L.S.A., of Bath, this month completes 50 years' service as coroner for North Somerset.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

President's Address. A Discussion on War Bread and its Effects on Health.

A MEETING of this society was held on Oct. 8th, when Sir STCLAIR THOMSON, the President, delivered an address on the Founder and the Foundation of the Medical Society.

Dr. ROBERT HUTCHISON and Dr. E. I. SPRIGGS introduced a discussion on War Bread and its Effects on Health. Dr. HUTCHISON said that before discussing the effects of war bread on health it was necessary to know something of its composition. The wheat berry consisted of three parts—the pericarp, germ, and endosperm. In making ordinary white (pre-war) flour only about 70 per cent. of the wheat berry was used, the germ and pericarp being entirely discarded and used mainly for fodder. In order to economise wheat it was now compulsory for millers to extract 80 per cent. of the wheat berry as flour, and some of the pericarp and germ was included. This Government regulation (G.R.) flour was the basis of war bread. Chemically such flour was richer in every constituent except starch than wheat flour, and in particular it was richer in vitamines and phosphorus. The question of its absorbability as compared with white flour was still *sub judice*, but there was no reason to suppose that it was inferior in this respect to white flour provided it were finely ground. War bread, however, was not always made from G.R. flour only. The addition of other cereals (maize, barley, rice, oats) up to certain limits was allowed. The proportion of these added by different millers varied, and it had been found impossible to standardise the flour for the whole country. None of the added cereals, however, could be regarded as injurious, and all were valuable foods. Maize had come in for most popular criticism, but if properly ground there was no harm in it, and much of the hostility to it was due to prejudice. As regards the bread, it must be recognised that it was impossible to prepare from the present flour a bread which had the same *æsthetic* qualities as pre-war bread. The darker colour was of no importance, but the relatively lower proportion of gluten, especially when other cereals were added, caused the bread to be less porous. This drawback would become less as bakers acquired more experience with the flour. As regards its effect on health, it seemed certain that there was nothing *chemically* injurious in war bread; indeed, it was superior from a chemical point of view to white bread. Any ill-effects could only be due to its *mechanical* properties (presence of grit, doughiness, &c.), and could only affect the digestive organs. The quality of the bread produced in different parts of the country, and even by different bakers, varied greatly in these respects, but from fairly wide inquiry there was no real evidence of any serious disturbance of digestion by the bread in the great majority of individuals. It must be remembered that patients were apt to find in the war bread a convenient explanation of any disturbance of health for which they could not otherwise account. In cases in which the bread seemed to disagree the effect of toasting and more thorough chewing should be tried. The speaker had not himself seen any patient in whose case he was convinced that the bread had affected the digestion unfavourably.

Dr. SPRIGGS said that he had not found it necessary to order white bread for the patients in Duff House, although there was always a good number of sufferers from digestive complaints. The war bread was, however, much better in some districts than in others, and their experience was, perhaps, fortunate. The complaints which followed the measures taken by the Government to make good the lack of wheat by the use of other kinds of corn arose from several reasons. The change in flavour was one reason. Another one was the lack of skill and experience in making the bread with the new kinds of flour. Further the mass of our people did not realise before the war that the cereals given to animals were good human foods, and did not know that by eating oats, barley, or maize ourselves we could get from them many times the food value that was obtained by turning them first into animal food. He referred to the figures of Professor T. B. Wood, who calculated that of nearly 17 million tons of various kinds of corn used in this country before the war only 5 millions went for human food. This was less than the average production of home-grown corn, which amounted to 6½ millions tons. Dr. Spriggs said that he had advocated the use in home-made bread of a mixture of barley flour or meal, oatmeal, rice, or maize, in the proportion of one part of the meal to two parts of wheat flour or war flour. This was a higher proportion of other cereals than millers were using at present. (Examples of these different kinds of bread were shown to the meeting and tasted by the members. Breads were also shown in which the added cereal had been boiled before mixing with the flour, making a spongier loaf.) In order to compare the digestibility of such bread with that made from wheat flour experiments had been made by Mr. A. B. Weir, B.Sc., chemist at Duff House, and himself. The subject was a healthy young man who took a mixed diet containing the same foods and in the same quantities every day, each article being weighed or measured accurately. The diet was was follows:—Breakfast: Eggs, butter, bacon, marmalade, cocoa, milk. Dinner: Fillet of beef, potato, cabbage, rice pudding, tinned pears, butter, cream, black coffee. Tea: Butter, jelly, milk, cocoa. Supper: Clear soup, haddock, butter, cheese, coffee, milk. With this a loaf of bread weighing about a pound was eaten daily. The bread was composed of two-thirds of white flour and a third of the meal or flour to be tested, and was made as described in Chapter IX. of "Food and How to Save it." These breads were compared with bread made from white flour alone; also with a war bread containing 10 per cent. barley and 10 per cent. maize. All the breads were palatable and were preferred by the subject to baker's bread, with the exception of that made with maize, the proportion of which (33 per cent.) was too high for making nice bread. The war bread, which contained 10 per cent. of barley and 10 per cent. of maize, was thought to be one of the nicest. Each experiment lasted three days. The flours were analysed separately. The other foods were all minced, mixed together, and analysed. The excreta for each three days were collected and their composition determined. The results were given to the meeting and showed that, although there were differences in the amount of protein, carbohydrate, and fat assimilated, yet the variations were not of importance, the total amount of foodstuff assimilated when expressed in calories being almost the same in each experiment—namely, between 95 and 96 per cent. of the food value eaten. The experiments demonstrated that bread composed of mixed cereals in the proportions recommended was palatable and, in this subject, proved as nutritious as white bread.

Professor W. H. THOMPSON, adviser to the Ministry of Food, said that it was important to get our protein food from a number of sources, because all proteins were not "adequate" for both growth and maintenance. Even maize had about one-third of its protein of the adequate type. He thought that much of the trouble was due to ignorance in milling and baking. In the early days millers were not fitted out to grind maize to a sufficient degree of fineness. Observations were now being carried out which he hoped would enable all that difficulty to be overcome. Samples of bread complained of had been sent to the Ministry of Food, but in no case could anything be found wrong except the colour.

Dr. E. KINGSCOTE said that he had been in North Italy before the war, where a large part of the community lived altogether on maize, many having no other food, but they were well nourished and healthy. He thought that the admixture of two flours might be the cause of the difficulty. The grinding of the maize was not equal to the grinding of the wheat, and in baking each required a different amount of time to arrive at perfect cooking.

Sir STCLAIR THOMSON said that the important matter of bread did not escape Lettsom's attention. It was gathered from his writings that the price of the quartern loaf in 1774 was 8*d*., but by 1800 he wrote that the quartern loaf was 1*s*. 6*d*., "a sum truly oppressive to the poor." With our present-day quartern loaf at only 9*d* after three years of world war our population might take courage by seeing what our forefathers had to endure in the Napoleonic struggles. In 1774 Lettsom, amongst his numerous essays, printed one entitled "Hints respecting a Substitute for Wheat Bread." The substitute he warmly recommended was the

[1] Published by H.M. Stationery Office, 1917. Price 3*d*.

fine flour of Indian corn, to be mixed with that of wheat in equal proportions. He added that, if rightly managed, the colour would be about the same as the standard wheaten bread and about 2*d.* in the quartern loaf cheaper than the fine wheaten when that might be at 8*d.* per quartern. After insisting on the great nutritive value and the agreeable sweet flavour of maize, he wrote that some, indeed, did not so easily reconcile themselves to it, which often arose from the mismanagement of grinding the corn or baking the bread. The bakers, he said, had not acquired the best method of mixing and preparing it with wheat flour, and as to the grinding, he advised that the millstones should first be set so wide as but just to burst the thick or farinaceous part of the grain, which should then be passed through a sieve so as to separate the part of the interior edge of the grain composed of a ligneous spongy substance, the middle of which was of a dark-brown colour and of a bitter taste, which, if ground into the flour, gave it a disagreeable flavour. When this deleterious part had been separated on the sieve the remainder should be ground with the stones set so as to render it sufficiently fine. Lettsom also suggested the use of potatoes as a partial substitute for bread, and recommended the use of one-fourth of potatoes with the remainder of flour. He pointed out that if a little ground rice were added the bread was prevented from crumbling, a matter of consequence in a large family.

Reviews and Notices of Books.

The New System of Gynæcology. Edited by THOMAS WATTS EDEN, M.D. Edin., F.R.C.S. Edin., F.R.C.P. Lond., Obstetric Physician, Charing Cross Hospital; Surgeon, Chelsea Hospital for Women; and CUTHBERT LOCKYER, M.D., B.S. Lond., F.R.C.S. Eng., F.R.C.P. Lond., Obstetric Physician to Out-patients, Charing Cross Hospital; Surgeon to In-patients, Samaritan Free Hospital. In three volumes. With numerous illustrations in colour and black and white. London: Macmillan and Co. 1917. Price £6 6*s.*

THIS work is really a second edition of the "System of Gynæcology" published in 1906 in association with Clifford Allbutt's "System of Medicine." We quite agree with the editors when they maintain that the gynæcologist is a surgeon rather than a physician, but the best combination is that of physician and surgeon which exists when he practises both obstetric medicine and gynæcological surgery, as he does in most of the larger hospitals in this country. We do not believe in the divorce of gynæcology from obstetrics. The gynæcologist certainly should have an acquaintance with the diseases of the kidney, rectum, and bladder, but we hardly think that diseases of the breast fall within his province, nor do we believe that the majority of gynæcologists treat these diseases. In our opinion, therefore, the editors have been ill-advised to burden an already large book by the addition of sections dealing with these surgical affections. The specialist who wishes to study the diseases of these organs will not refer to a treatise on gynæcology, he will consult rather a treatise on surgery, and in this he would be showing his wisdom. The result of the inclusion of these sections is three volumes where two might have been sufficient and a considerable increase in the cost of the book. No doubt the sections on general surgery which have been included are very good as far as they go, but, naturally, they cannot be so full as they might, and probably would, be in a System of Surgery. For these reasons we shall make little reference to them, although several of them are of great merit.

The work has been issued in three volumes, containing in all some 2507 pages. The format, printing, and paper are a great improvement on the original edition, and the whole is a most readable System. The first section in Vol. I. is a good, but too short, account of the Anatomy of the Pelvic Organs by Professor Elliot Smith and Dr. J. S. B. Stopford. We wish that the editors had allowed them more space. In the second chapter Miss A. L. McIlroy discusses the Physiology of the Female Reproductive Organs. She regards the luteal cells as the undischarged follicle cells, a view in direct contradiction to that expressed by Dr. Lockyer and Dr. H. Williamson in other parts of the book. The section is good and complete, and the writer is careful not to draw unwarranted conclusions. Dr. Ernest Shaw contributes a good description of the organisms met with in the female genito-urinary tract, and Mr. Beckwith Whitehouse devotes some 70 pages to discussing methods of examination which hardly seem necessary in a work of this character. The book will only appeal to the advanced student, and more particularly appeals to the teacher and specialist. Dr. W. W. C. Topley writes on the various methods of blood examination of proved clinical significance. It is interesting to note that he counsels the clinician to await further developments before placing reliance on Abderhalden's test for pregnancy. Dr. J. W. Ballantyne contributes a very interesting article on Malformations of the Female Generative Organs. The anomalies of the uterus would be rendered much easier to understand if it were pointed out, as is done by Professor A. Keith in his book on "Human Embryology," how all the varying forms of uterine mal-developments are met with as the normal condition in the different classes of animals. This wise generalisation has been found of great assistance in teaching students. Dr. W. Blair Bell contributes a long article on Disorders of Function, which contains many most interesting statements, some of which are more convincing than others. Dr. G. Blacker has written a very complete account of tubal pregnancy, including the subject of hæmatocele, which in the previous edition was considered, quite wrongly, apart from its main cause—viz., ectopic gestation.

The rest of this volume is devoted mainly to pelvic infections. Dr. Carlton Oldfield contributes a good account of Septic Infections, in which he lays too much stress, perhaps, upon the now somewhat old-fashioned distinction between sapræmia and septicæmia. He apparently has not much faith in sera or vaccines, and, we are glad to see, states that it is doubtful whether operative treatment of puerperal pyæmia gives a greater percentage of recoveries than the expectant method.

Naturally, in a book by so many different authors there are bound to be striking contradictions. On p. 553 we are told that "hysterectomy for puerperal infection should not be thought of," while on p. 663 we find "without a doubt there are cases which can be saved by surgical interference and by nothing else." Dr. T. G. Stevens's article on Gonorrhœa in Women is very practical and to the point, and there is a good description of Tuberculosis of the Pelvic Organs by Dr. Clifford White. It is a pity that the editors have not insisted upon consistency in the use of terms such as tubercular and tuberculous; on p. 627 both terms are used indiscriminately. The latter is, of course, the correct one in the circumstances. The section dealing with Inflammation of the Fallopian Tubes, by Dr. J. M. Munro Kerr, is essentially clinical, while in that on Pelvic Cellulitis, by Dr. J. S. Fairbairn, the good work done by the late Dr. Cullingworth is fully recognised. There is a short, in our opinion too short, article on Syphilis in Women by Mr. A. Shillitoe, of which the most interesting portion is that dealing with conceptional syphilis. Two of the most original and important articles in this volume are those dealing with Streptothrix and Echinococcal Infections of the Pelvic Viscera, by Dr. H. C. Taylor Young and Professor D. A. Welsh. A short article on Nervous Diseases Associated with Morbid Conditions of the Pelvic Organs is contributed by Dr. Purves Stewart.

Vol. II. opens with a good and well-illustrated account of Diseases of the Vulva and Vagina by Mr. Comyns Berkeley. The article on endometritis by Professor B. P. Watson is the best and clearest account we are acquainted with of this often talked of but rarely met with condition, and should do much to remove the confusion which is still present in the minds of so many writers on this subject. We hardly regard erosion of the cervix as worth a special section. An extremely interesting and important article, one of the best in the whole work, with a number of beautiful coloured illustrations, is that by Dr. Fletcher Shaw on Chronic Metritis. Professor R. G. McKerron writes on Morbid Involution and Dr. Hastings Tweedy on Cervical Lacerations. Dr. Lockyer will add greatly to his reputation as a pathologist and careful clinical observer by his article on Myomata—emphatically the best account of these tumours to be found in any text-book. In devoting, however, some 80 pages to the engrossing but not very important subject of adenomyomata he has allowed his enthusiasm to overcome his sense of proportion. This section is rather of the

nature of a critical essay and contains the names of numerous writers without references. Lists of names are useless to the student, and annoying to the expert when unaccompanied by references so that he may without undue difficulty refer to the originals. Dr. R. W. Johnstone contributes an interesting account of Sarcomata of the Uterus. The section on Cancer of the Uterus by Professor T. Wilson is a mine of information. We are afraid, however, that the author's pathology will tend to increase the confusion which surrounds at present this subject. His statements are hardly borne out by his illustrations, so far as it is possible for the reader to draw any conclusions from them as to the correctness of the statements made. We do not fancy that Professor Wilson will find much support for his views among pathologists, nor do we regard them as correct. Of the excellence of the article as a whole there can be no question, and the discussion on treatment will be read by all gynæcologists with great interest. It is the more valuable because the writer is able to contrast in an authoritative manner the older with the more modern results of operative interference. Professor H. J. Teacher's article on Chorion Epithelioma Malignum is, as might be expected, very full and good. Professor W. W. Chipman writes a reasoned and effective account of Backward Displacements of the Uterus, in which he lays appropriate stress upon the large part played by some degree of prolapse in these cases, and which includes a well-balanced discussion of operative treatment. In his account of Prolapse of the Uterus Dr. W. E. Fothergill, who has changed his views, maintains if the surgeon can do vaginal work well no abdominal operation should be performed for this condition. He is very optimistic about the results of such operations, and in this he differs from most writers. We are glad to see that he condemns hysterectomy for uncomplicated prolapse. The section on Inversion of the Uterus is contributed by Professor W. C. Swayne. Dr. Lockyer, in the article on cysts and tumours of the Fallopian tubes, alludes to the embryonic tubules regarded by Professor A. Keith as the homologues of the rete testis. We can find no allusion to this interesting question either in the index or in the article on the anatomy and development of the pelvic organs. This volume is completed by a very clear and good account of Tumours of the Ovary by Dr. H. Williamson and Dr. J. D. Barris.

Vol. III. contains articles on Diseases of the Breast, by Mr. C. C. Choyce; on the Vermiform Appendix, by Mr. H. J. Paterson; on Methods of Examination of the Urethra and Bladder, by Mr. J. Thomson Walker; on Diseases of the Rectum, by Mr. J. P. Lockhart-Mummery; and Intestinal Complications in Gynæcological Surgery, by the late Mr. Scott Carmichael. Mr. W. Gilliatt writes on Affections of the Urinary Tract, and Dr. Eardley Holland on Hernia in Women. A good article on the Technique of Gynæcological Operations is contributed by one of the editors, Dr. Eden. There is a short but clear section dealing with anæsthetics, by Dr. F. S. Rood, and this is followed by two articles of considerable interest, by Dr. A. Donald and Dr. A. E. Giles respectively, on ovariotomy and hysterectomy. Dr. Giles's article is a particularly good and interesting one, as it includes some valuable statistics and a summary of the history of the development of the operation. Surgical operations on the gravid uterus are described by Professor Munro Kerr with commendable brevity and clearness. We notice he does not think that extraperitoneal Cæsarean section will survive unless it is proved that the cicatrix in the lower uterine segment is stronger than one in the upper part of the body of the uterus. Professor Howard Taylor's section on vaginal cœliotomy is good, but gives one the impression that his advocacy of this method is of a somewhat half-hearted nature, and, if this is so, we are in agreement with him. Professor J. B. Hellier deals with fistulæ in the female pelvic organs. Mr. Victor Bonney describes the various minor gynæcological operations, and Professor Franklin Martin writes a most instructive chapter termed the After-treatment of Gynæcological Operations (should it not be of patients after such operations?). The articles on Röntgen Rays and Radio-Therapeutics in Gynæcological Practice would be of greater value if they were a little more up to date.

It is impossible to do complete justice to a work of this scope in a review. We have no hesitation, however, in saying that this "System" does the greatest credit to all concerned in its production, and it is the best and most complete work on gynæcology which has appeared so far in the English language. The illustrations are many of them of great beauty and extremely well reproduced, and great credit is due to the artists who drew them. We hope, however, when the book reaches a second edition that the editors will improve it by adding a proper bibliography to each section, by enlarging and revising the index and equipping each volume with a general index, and by omitting all the articles on purely surgical subjects. In this way the size of the work might well be reduced and at the same time its cost, which is excessive.

Acute Appendicitis. Practical Points from a 25 Years' Experience. By C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P. Lond., late Specialist in Surgery, Military Hospital, Devonport; Author of "Anæsthetics in Surgery," &c. London: Harrison and Sons. 1917. Pp. 72. Price 4*s.* net.

IN this little book the author has put together the main facts relating to the diagnosis and treatment of acute appendicitis. In the diagnosis the several symptoms are discussed seriatim, so that the reader is made to understand their relative value. The indications for operation are also clearly given. The author is in favour of immediate operation in all cases, but he limits the operation to incision and drainage if an abscess is present and the appendix does not present itself; while if any diffuse peritonitis is present and the patient is collapsed no attempt is made to remove the appendix even if it has not ruptured. The book is certainly likely to be useful, and with nearly all the opinions expressed we fully agree, but it does not contain sufficiently detailed instructions. For instance, the author, with good reason, praises highly the "Murphy drip," or protoclysis, and he mentions many useful points in connexion with it, but we feel sure that no one unacquainted with the method would be able to carry it out from the instructions contained in this book. We should be interested to learn why the author writes "appendiceal" and "nossil."

The Biology of Twins (Mammals). By HORATIO HACKETT NEWMAN. The University of Chicago Science Series. With plate and 55 figures in text. University of Chicago Press, Chicago, Illinois. 1917. Pp. 185. Price $1.25.

THIS little book contains an excellent account of the curious and very special phenomenon of polyembryony in certain armadillos. The condition has been known to zoologists for many years; but it is due to the labours of M. Fernandez, J. T. Patterson, and the author of this volume that it has been placed of late upon a firm basis of ascertained fact. As a connected account of this curious phase of reproduction the work is a useful one to the biologist. Some account is also given of the production of twins in man, and the work of Wilder is presented with some fullness; but it cannot be said that this portion of the book reaches the level attained by the chapters on armadillos. Among the list of "authors" at the end of the volume one notes the name of P. J. Barnum. This is obviously intended for the late Mr. P. T. Barnum, who is included as an authority on human twins on the strength of having exploited the Siamese twins. On the other hand, one looks for the name or the work of Ballantyne in vain.

The subject of twins among the offspring of cattle is dealt with in a far less satisfactory manner. Here the work of F. R. Lillie is largely followed and the "hormonic theory" of the formation of the freemartin is upheld. In assuming that the freemartin is a female with certain male characters the author throws aside the work of Berry Hart and others in a manner which is not in accord with the best traditions of science.

AT a recent meeting of the Plymouth Housing Committee it was stated that 2000 new houses for working men were required at once, and at the conclusion of the war an additional 1000 would be necessary.

CHOLERA IN THE PUNJAB.—Cholera has occurred in the Punjab, chiefly amongst persons returning from a visit to Hardwar, the holy places on the Ganges. In the majority of cases there has been no difficulty in preventing the spread of the disease, but an outbreak in the Umballa district is giving cause for anxiety, as 69 cases and 38 deaths have occurred there.

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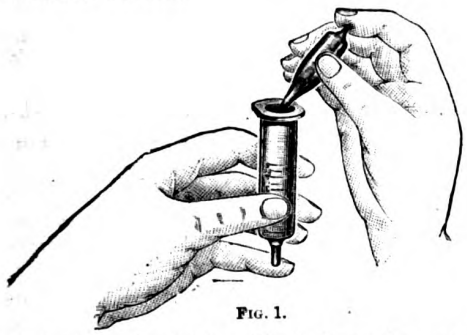


FIG. 1.

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THE LANCET, June 10th, 1916:—

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"Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War, in reply to the Deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St. Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ....."

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Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines, with vegetable extracts of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen.

It is a normal regulator of the gastro-intestinal functions; consequently it improves the metabolic changes of the entire organism.

Opolaxyl does not lose its efficacy by prolonged use; its effect is gentle and constant, with the least irritation. It is not merely purgative; it stimulates the defective organs and revives the normal equilibrium; it has a lasting effect by reason of it rebuilding the organs, thus correcting diminutional function.

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Specially indicated in chronic gonococcal infections and their sequelæ, such as gonococcal arthritis and iritis, prostatitis, epididymitis, vesiculitis and cystitis in the male; and vaginitis, cervicitis, endometritis and salpingitis in the female. In cases of acute urethritis treatment requires to be supplemented by germicidal injections, such as argentide or protosil.

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THE LANCET.

LONDON: SATURDAY, OCTOBER 13, 1917.

Prophylaxis in Venereal Disease.

As we announced last week, the question of the artificial prophylaxis of venereal disease has been discussed recently by the National Council for Combating Venereal Diseases, and a special meeting of the Council will be held on Monday next, Oct. 15th, at the house of the Royal Society of Medicine, and will have before it a resolution, the fate of which is awaited with deep attention by the medical profession and the public. The resolution which will be submitted to the National Council by the Executive Committee of that body runs as follows:—

In view of the public attention now directed to the whole subject of prophylaxis, the Executive Committee, after careful consideration, is not prepared to depart from its original position, in which, in accordance with the spirit of the Royal Commission's Report, it refrained from recommending the adoption of prophylaxis—i.e., the provision of outfits to men before sexual indulgence. The committee strongly urge the importance of the making of arrangements for the early treatment of venereal disease even before the outset of symptoms.

Will the National Council remain of the opinion expressed in the resolution?

The whole question of the artificial prophylaxis of venereal disease is thus introduced for debate by the National Council, but in considering that question we are now regarding generally the health of the public in the fourth year of war, and especially the condition of our Imperial Armies, both as fighting men and as future citizens. We are not blind to the religious forces which coerce the vote of some consciences on all sexual matters; nor do we write ignoring the claims made by many public-spirited and enlightened women for an equality of treatment between the two sexes in regard to circumstances which surround mutual actions. These things have due weight with all who desire the right. They will certainly receive earnest attention from the National Council when considering the resolution of the Executive Committee. We do not discuss them here because all that is to be said along the two lines indicated has been said so often that our readers are familiar with the arguments and know exactly why the National Council has adopted the line of policy indicated in the resolution. Attention is called now to the fact that the facilitation for men of artificial prophylaxis before sexual indulgence has been deliberately excluded from the scheme devised by the National Council. The Council, in declining to recommend or to take cognisance of any steps of the kind, has followed the lead given to it by the Report of the Royal Commission on Venereal Diseases the translation of whose conclusions into law was the reason for the creation of the Council. The Executive Committee urge upon the National Council the importance of the making of arrangements for the early treatment of venereal diseases, even before the onset of symptoms, but they do not now, any more than in the past, advise any departure from the original line taken up with regard to artificial prophylaxis. They will expect to be asked to support the policy which they continue to advocate by facts, inasmuch as facts are being brought forward to make it doubtful if their policy is now the best, whatever it may have been two years ago. And it would probably be better if preventive treatment, for purposes of the discussion that must ensue, were divided into three headings, and that under each the circumstances of the civilian population were regarded as differing from those of the Navy and Army. The three headings are: (1) artificial prophylaxis; (2) early preventive treatment; and (3) the control of loose women in certain areas. It seems to us clear that the preventive treatment in relation to venereal disease among troops should start earlier than it does now—that is to say, that the form of prophylaxis alluded to in the report of the Executive Committee should no longer be refrained from. We published last week a brief account of the measures taken in great centres in India and Australia to enlighten the public generally as to the incidence of venereal disease, and especially to protect the soldiers; and it is largely in the interest of the Colonial contingents of our Army that the National Council for Combating Venereal Diseases may be inclined to depart from its original position. The Canadian, Australian, and especially the New Zealand troops have suffered greatly from venereal disease, and, with regard to the last, we have been furnished with figures—supplied also, we understand, to New Zealand newspapers—which almost justify the phrase employed in the communication that "London is the plague spot of the world." There can be no doubt that the feeling among numerous officers of our Colonial troops is that the facilitation of artificial prophylaxis is necessary for the safety of their men, while many are convinced that the control of loose women would greatly increase the fighting strength, and would annul the risk that the soldiers may carry back to their homes hereditary disease as well as the glory of having fought for their country. To these feelings every consideration is due; and, if the views expressed can be supported statistically, the country at large will hold that the National Council for Combating Venereal Diseases have a responsibility put upon them by the war that was not upon them when they were created to carry out the valuable conclusions of the Royal Commission.

We are in the face of military facts: all men are wanted, and venereal disease prevents a certain proportion of them from responding to the call. Measures might quite sensibly be taken now which would have no justification in normal times; nor would a change of attitude at such a juncture mean a permanent return to discredited social tactics. We are at this moment reconciled, with a

unanimity that would have been quite inconceivable three years ago, to the distribution of bombs by aeroplanes upon German cities. Does anybody believe that the spirit thus indicated is likely to remain a permanent national spirit of this country? In the same way, we do not for a moment suppose that, if it should be found wise to-day to control the action of certain women in certain military areas, or to recognise the existence of illicit coitus by instituting a system of supply to sailors and soldiers of prophylactic apparatus, we should be committed in the future to the lower state of public morals indicated by such methods. These are some of the more important points which the National Council for Combating Venereal Diseases will have before them at their meeting on Monday next, and we feel sure that they will be debated frankly, and that no restraint will be put upon the expression of opinion by the allegation that to depart from a line of conduct hitherto followed is either to do ill with the illogical hope that good may come, or to display a cowardly inconsistency. It requires knowledge to decide what an ill deed really is, and it requires courage to deal with facts which contravene an accepted course of procedure.

War Deafnesses.

DURING the present war there have returned from the French front a very large number of officers and men who considered that their hearing had been damaged by gun-fire or shell explosion. The features of these cases differed from the familiar gunners' deafness of former times in that the damage appeared to be the result of a relatively short exposure to detonation, often to be the consequence of a single shell-burst, and tended almost uniformly to recovery, sometimes sensibly complete, but in the majority of instances partial. Tinnitus was not generally a prominent feature. In the type case there was no visible damage. In addition to these cases there have been many of chronic or recurrent middle-ear suppuration which we may put on one side, and a relatively small class with evidence of recent bursting of the membrana tympani. Within the experience of many observers these cases with manifest middle-ear damage have escaped with a middle-ear deafness only.

The difficulties in classification and prognosis attach to the group which presents no evidence of local injury and with an apparent labyrinthine deafness, and they arise from the fact that with our present methods of testing hearing we have no sure means of distinguishing the two factors in hearing, the capacity of the peripheral instrument in the cochlea and the performance of the cortical organ of consciousness operating with this. From the experience following the testing and watching of a large number of cases throughout the war, it would seem that the cortical factor may vary in intensity from a mere feebleness of concentrated attention to a total inhibition of any attention at all. The more complete the inhibition, the greater the likelihood that recovery, if it takes place, will be sudden. Deafness, however, rarely remains total, and the common history is that nothing at all can be distinguished for a few hours, that then hearing begins to return, but that after some few weeks it still remains defective, often more so in one ear than the other. Further, some of these patients have experienced a greater or less degree of giddiness in the early stages, and some have vomited. Finally there is, we believe, histological evidence that the cochlea may be extensively disorganised as the result of concussion by explosion, a condition which could hardly result in anything but total labyrinthine deafness. If we put these points by the side of the fact that patients with burst membranes do not exhibit serious labyrinthine types of deafness, it is probable that there is in many cases a real labyrinthine factor in these deafnesses. An interesting pair of cases, illustrating the extreme degree of suppression of cortical function, were recorded in THE LANCET of Oct. 6th by Major A. F. HURST and Captain E. A. PETERS, who are to be congratulated on obtaining recoveries which might have been long delayed. The employment of suggestion under light administration of an anæsthetic is well known, and in these cases the suggestion proved powerful. We feel a little doubtful, however, of the desirability of the frequent use of the method, having a prejudice against any procedure which may lead in the long run to abuse, and a consequent lowering of the status of surgery. We believe it likely, moreover, that any other powerful stimulus applied during the removal of the subconscious determination against hearing would have been as effective as suggestion proved. The clinical points of interest seem to be the completeness of the suppression of reflex from the lower centres even in sleep, and the fact, in view of this, that the voice was not altered, showing that somewhere in the depths of consciousness there still lay hidden the appreciation of the patient's own voice. As to the conclusion arrived at by Major HURST and Captain PETERS that an apparently total deafness associated with continued excitability of the posterior labyrinth is evidence of hysterical deafness, a doubt may reasonably be expressed, on the ground that two cases are quite an insufficient basis for such a generalisation, and on the further ground that cases of mild labyrinthitis occur in which there appears to be total deafness but in which the canal reflex can still be excited.

The inquiry opened by Dr. T. B. JOBSON, whose paper appears in another column, into the question of the effect of gun-fire on the generality of men exposed to it, and not aware of any resultant deafness, is an interesting one and worth, we think, further and much fuller pursuit. At present the data appear to us to be altogether inadequate to furnish conclusions. The apparent loss which Dr. JOBSON found for a C2 fork, if this be a fairly heavy one, is not greater than will be found in a large proportion of average hospital patients, and appears to be largely due to the defect of training in attention, and this holds for both air and bone conduction. It has further to be remembered that

in any random sample of the adult population a sufficient number of really deaf ears will be *present* to furnish the proportion of larger defects. It would be interesting to know whether one ear, say the right, was uniformly tested before the other, and whether the tests were made singly or as the mean of several determinations. A further ground for doubting the conclusion arrived at is the general belief in the past that gun-deafness is not at all an obstructive deafness, but of a purely labyrinthine type.

Annotations.

"Ne quid nimis."

WOMEN AND A STATE MEDICAL SERVICE.

THE subject of a Ministry of Health claimed the attention of the Medical Women's Federation at their recent conference in Manchester, and no dissent was expressed with Dr. Jane Walker's view that such a Ministry was really coming and was to be welcomed in so far as it simplified the present cumbersome methods of various Government departments dealing with health matters. But a distinction was clearly drawn between such action and the merging of the personality of the general practitioner in a State Medical Service. Dr. Catherine Chisholm dealt with the whole question as it affects medical women and their individual work. To the women of the country the woman practitioner has become a necessity in their lives, someone, that is, who knows the family intimately, its health, its position, and its difficulties, and who is a friend in need at times of trouble. Women are relying more on doctors of their own sex for themselves and their children, and Dr. Chisholm foresees an ever-increasing demand for medical women practitioners in all grades of social life. But the development of public health practice acts on the profession of medicine by women in many ways, for while such practice rivals general practice in interest, it provides posts with fixed salaries and regular hours, which may draw away numbers of women who would otherwise do general service among the people. The right solution for this perplexing situation Dr. Chisholm sees in a better coöperation between the various phases of medical activity. While women should be encouraged to develop their medical work along the lines which most appeal to them, specialisation ought to follow on general experience and not commence at too early a stage in the career. The practical clinical work under the various departments of the Ministry of Health, such as maternity, child welfare, and venereal treatment, should, in her opinion, be carried out by medical practitioners who have given evidence of special experience in these subjects rather than by whole-time officers. At present these posts are often held by women with little, if any, general experience either of medicine or of life, with results which, Dr. Chisholm finds, are disadvantageous to preventive medicine, while promoting jealousy between it and clinical practice. Part-time posts, at all events in large centres, are not open to the same objection, and if the practical encouragement of specialisation led to women of ability settling in sufficient numbers in areas where they are needed, the general public would be the gainer, and there would be a raising of the standard of the work done. On these grounds Dr. Chisholm advises her colleagues in general practice to welcome the setting up of State-subsidised treatment centres with laboratories attached, to be at the service of all practitioners, thus affording opportunities to the insured for specialised treatment. Women practitioners with special qualifications could then choose between private practice, or paid posts at the centres, or a combination of the two. Dr. Chisholm's suggestions will command the careful consideration of the many keen women students entering the medical profession.

FUNCTIONAL CARDIAC AND PULMONARY TROUBLES ATTRIBUTABLE TO A LESION OF THE CARDIAC PLEXUS AND THE NERVES IN THE MEDIASTINUM.

AT a meeting of the Académie de Médecine of Paris M. Emile Sergent called attention to a lesion which the war has brought to light. He has observed a group of cases in which wounds of the chest are followed some time after recovery by respiratory difficulty, palpitation, and pains, and yet examination of the chest shows complete integrity of the heart, pericardium, lungs, pleuræ, and mediastinum, except perhaps for the presence on the screen of the shadow of a bullet in the region of the great vessels, in the zone of the cardiac plexus. Excluding nervous and hypochondriac patients, there remains a certain number of wounded, the reality of whose troubles cannot be doubted. M. Sergent's attention was first called to this group by the following case.

At the beginning of the war, in August, 1914, a man was wounded by a rifle-bullet which entered the chest 4 cm. above the left nipple, passed from before backwards, and lodged in the muscles of the back on the left side. After initial symptoms, such as loss of consciousness and hæmoptysis, he was considered cured and sent away convalescent. However, he continued to complain of constant oppression, increased by the slightest effort, palpitation, and pains in the chest. M. Sergent saw him in November and found typical left phrenic neuralgia with immobility of the left half of the diaphragm, instability of the pulse, which increased on the slightest movement, inequality of pupils (the left being in mydriasis), and preservation of the accommodation reflexes. Radioscopy showed complete integrity of the lungs, pleural cul-de-sacs, mediastinum, and movements of the heart, and confirmed the immobility of the left half of the diaphragm. There gradually developed hypertrophy of the thyroid gland with permanent tachycardia, tremor, and proptosis. Under high-frequency currents and "hemato-éthyroidine" the symptoms of Graves's disease diminished at the same time as the other symptoms.

M. Sergent attributes these symptoms to lesions of the cardiac plexus and the phrenic nerve produced in the passage of the bullet. He regarded the supervention of symptoms of Graves's disease as supporting the theory which ascribes them to irritation of the sympathetic. His view was supported by 9 other cases of the same kind in which there was instability of the pulse and respiratory rhythm with constant dyspnœa, increased by the slightest effort. To these cardinal symptoms there was added in 3 cases phrenic neuralgia, inequality of pupils in 4, and symptoms of Graves's disease in 5. In all the region of the cardiac plexus was injured by a projectile, which was shown either by its presence being revealed by radioscopy or by the position of its track. When the projectile is present the question of its removal arises. The surgeon must consider whether the risks of operation in such a region are not greater than those of

abstention. From the military standpoint these cases are important. They indicate that in cases of wounds in this region, when neither auscultation nor radioscopy shows anything abnormal, the conclusion that the patient is exaggerating or simulating should not be hastily adopted.

A SCHEME FOR A MINISTRY OF HEALTH.

A MEMORANDUM presented by the National Insurance organisations of the country and printed by the Insurance Publishing Company, Limited (price 4½*d.*), contains a concrete scheme for the establishment of a Ministry of Health and for the transference to it of functions hitherto discharged by various Government Departments. The main points of the scheme are as follows:—

1. A Bill to be brought in at the beginning of the autumn session which shall establish a Ministry of Health in charge of a Minister of Cabinet rank, with the specific duty of securing proper health measures and conditions throughout England and Wales.

2. The Bill to transfer from the outset to the new Ministry all the functions, other than judicial and quasi-judicial, of the Insurance Commissioners for England and for Wales, the excepted functions being transferred to a special body to be set up by Order in Council.

3. To transfer also to it from the outset all the more directly medical functions of the Local Government Board under the Public Health Acts, and at a later stage its other functions under those Acts, but none of its functions under the Poor-law until certain other changes have first been made.

4. To transfer also to it from the outset the functions of the Board of Education as regards maternity and infant welfare, and later on in respect of crèches.

5. To transfer to it from the outset the functions of the Privy Council in respect of Midwives, and, later on, its other medical or analogous functions.

6. To transfer to it at a later stage the functions of the Registrar-General; certain functions of the Home Office; and those of the Board of Control for Lunacy.

The suggested Bill is to be accompanied by Exchequer grants to be disbursed by the new Ministry for promoting health schemes of local authorities. The memorandum urges the Government to press on with legislation so that the scheme may come into effective practical working by the beginning of 1918. However improbable may be the immediate realisation of such a scheme and all that it entails, we welcome the clear statement of the aims of the Approved Societies as a basis for discussion.

PARAFFIN AND AMBRINE IN THE TREATMENT OF WOUNDS.

THE method recently brought forward by Barthe for burns and frost-bites by the use of ambrine is a rational method of treatment for wounds in general, inasmuch as it affords an absolute protection for young epithelium. The special properties which its originator claimed for ambrine were a definite melting-point, a definite rate of cooling, tolerance of the tissues to its heat, and its retraction on cooling. Professor Masnata having made extensive experiments as regards the relative physical properties of ambrine and pure paraffin having a melting-point between 50° and 52° C., has come to the conclusion that the therapeutic properties of ambrine are due entirely to the paraffin.[1] He found that the paraffin formed a covering round wounds which adapted itself to the most minute sinuosities, protecting them efficiently and keeping them immobile. The excellent results obtained by this method, he says, must be attributed to this property of paraffin of adapting itself to the tissues without adhering to them, so that when the dressing is removed there is no lesion to the superficial granulations nor the least trace of blood. The secretions find their way along the internal surface of the paraffin layer and are absorbed by the gauze at its edge. The absence of any irritation or injury to the wound facilitates to a marked degree the proliferation of epithelium, rendering the use of nitrate of silver to reduce exuberant granulations unnecessary. Professor Masnata made use of paraffin in a very similar manner to that advocated by Dr. Barthe for ambrine. The paraffin, which should have a melting-point of 50° to 52° C., is liquefied in a porcelain dish and raised to a temperature of 120°–150° for sterilisation; it is then poured into a *bain-marie* and cooled to 70°–80° C., and kept at this temperature during use. After the wound has been cleansed with sterilised gauze and warm water it is dried, preferably by a current of hot-air from an electric apparatus, and then, by means of a large soft brush which has been sterilised by immersion in the heated paraffin, a layer is gently applied all over the surface. Absorbent wool and bandage complete the dressing. After-dressings are made every 24 hours or every two days, according to the amount of secretion; removal is easy as the layer of paraffin comes away with the wool and does not stick either to the skin or to the wound.

[1] Policlinico, Surgical Section, June 15th, 1917.

A NOMENCLATURE OF SMELLS.

A CORRESPONDENT asks, Is there no genius prepared to give us a nomenclature of smells? and, referring to a paper on "Wound Treatment" in our columns, suggests that it ought to be possible to name a wound smell, and so to obviate the despatch of samples. An approach has been made many times, but with little success, to the establishment of a system of nomenclature comparable for smells with the classification which we have been able to set up in the cases of the senses of seeing and hearing. The fact is that, so far, smells have not been capable of the analysis which is possible with light and sound. In both these cases we have a gamut or a law of octaves, as also with the atomic weights in chemistry, and perhaps some day a similar analysis in regard to odours will be forthcoming. At present we are without a nomenclature, and everybody experiences the difficulty of describing a smell. We have to be content to say that a given smell resembles another smell which is more or less familiar. The fact is that the sense of smell has been the least cultivated of the senses, and it is just possible that if the subject had received the same attention as have the senses of hearing and sight the study of odours would have reached a higher scientific plane, though, it appears to us, the classification of smells must always suffer from the absence of the mathematical analysis capable in optics and acoustics. As it is, in our struggle to describe a smell we are confined to using such terms as peculiar, persistent, pleasing, disagreeable, sour, bad, musty, sickly, and so forth. Now these are all adjectives which give us little enlightenment. We appreciate at once what is the colour of an object called red, and when we fall back on the reference to common objects, for the

purpose of more exactly defining a colour—thus a yellow colour is frequently described as lemon *or canary*, a red colour as brick or claret—our comparisons are made to objects whose hues are fixed by mathematical laws. In the case of sound and light we have a comparatively narrow scale. There are seven primaries as seen in the spectrum and in *the range* of notes from A to G. It is difficult at present to determine whether smells may be similarly brought into a system of scales or octaves. Such a system, however, has been suggested in the construction of perfumes. Many years ago Dr. Septimus Piesse, for example, set out a series of odours in parallel with a musical scale and showed how it was possible to make a bouquet correspond to a chord. Perfumers thus speak of a gamut of odours, placing the name of the odour in a position corresponding to its effect upon the olfactory sense in the order of the amplitude of vibration. The gamut of odours thus constructed certainly suggests a law of octaves, for we find that, according to Dr. Piesse's ingenious arrangement, at the lower end of the scale the note B corresponds with clove, while the octave B above gives stocks and pinks and the higher octave B cinnamon. The keen sense of smell will recognise a similarity of odours here just as the musician recognises the repetition of a note in octaves. The fact that some persons associate certain colours with smells, and that others speak of certain musical notes as suggesting corresponding colours, is interesting sentimentally but not scientifically.

HEALTH OF BELFAST IN 1916.

OUR Belfast correspondent writes:—

"The annual report for 1916 of Dr. W. H. Bailie, medical officer of health of Belfast, just issued, tells us that the death-rate (calculated on a population as estimated by the Registrar-General to the middle of the year of 390,000) was 16·7, which is the lowest ever recorded in the city. The birth-rate was 24·1—a decrease of 1·2 per 1000 as compared with the previous year—and is the lowest ever recorded. In 1890, when it was highest, the birth-rate was 35·5 per 1000, and there has been a steady drop since 1896, when it was 34·5. In 1895, with a population of 295,000, there were 9772 births; while in 1916, with a population of 390,000, the births were 9415, or a population of almost 100,000 more has yielded 357 fewer children. Of the deaths of children under one year, 36·8 per cent. were due to congenital debility, 17·3 per cent. to diarrhœal diseases, 15·9 per cent. to bronchitis and pneumonia, 8·2 per cent. to whooping-cough and measles, and 4·8 per cent. to convulsions, these being the principal causes of death. It is satisfactory to note that the infantile mortality rate—113 deaths per 1000 births—shows a decrease of 24 per 1000 on 1915. Of the 6496 deaths registered during the year 1916 there were from diseases of the respiratory system 1176 (pneumonia 506, others 670), and from tuberculous diseases 1131 (phthisis 830, other forms 301), from cancer 332, from diarrhœa 236 (198 under two years of age, and 38 two years of age and upwards), from measles 191, from violence 147, from whooping-cough 120, and from scarlet fever 52. There were 1067 deaths (that is, 16·4 of total deaths registered) under one year—namely, about one-sixth of the deaths in Belfast in 1916 were due to infantile mortality. Of the 1467 cases of infectious diseases notified, 969 were scarlet fever, and 650 deaths—a mortality of 1·7 per 1000 of the population—were caused by zymotic diseases (seven principal zymotic diseases). Out of the immense number of cases of scarlet fever, 969, there were 52 deaths, while 191 deaths were registered from measles and 120 from whooping-cough. It is noteworthy that the deaths from measles were 12 more than the notifications, and from whooping-cough 81 more, these facts indicating the uselessness of any system of voluntary notification. Pulmonary phthisis caused 830 deaths (that is 2·1 per 1000, an increase on the rate of the previous year, which was 2·0), yet owing to the absurd way the Tuberculosis Prevention (Ireland) Act, 1908, was drawn, there were only 69 notifications of patients suffering from tuberculosis of the lung in 1916."

THE HEALTH OF THE ARMY IN 1913.

AT the present time of writing the year 1913 seems to be a long way off, and what was of importance then can hardly be regarded with much interest under the circumstances of to-day. There are certain duties, however, that have to be carried on whatever happens, and amongst these the continued preparation, collection, arrangement, and publication of statistical data may be reckoned as not the least important, though the difficulties to be overcome in the way of depleted staff and increased work—this often of a most urgent and peremptory character—must be considerable. We feel that an acknowledgment is due to the War Office authorities for having prepared and issued the Report on the Health of the Army for 1913, which bears the marks of clearness, conciseness, and completeness that have distinguished its predecessors for more than half a century, and have made them statistical models for the corresponding publications of other Governments throughout the world.

The volume now under notice will always have a special statistical interest as showing the health conditions of the Army immediately before the outbreak of the war—an epoch of profound historical importance.

During the year 1913 the ratio of admissions to hospital was somewhat in excess of the corresponding figure for 1912, but the ratios for death, constantly sick in hospital, and invaliding were less than in any previous year. The following table summarises the most important points in ratios per 1000:—

	Admissions.	Constantly sick.	Deaths.	Invaliding.
1889–1898	997·3	59·85	9·03	15·36
1899–1908	700 9	40·52	6·65	17·56
1908–1912	473·5	26·39	3·80	8·88
1912	426·3	23·72	3·26	8·25
1913	437·7	23·53	2·81	7·88

According to the system that has been in successful operation for some years, men suffering from certain trivial affections are treated in barracks instead of being admitted to hospital. If these slight cases (8·68 per 1000 constantly sick) be added to the hospital cases the total ratio comes to 32·21, a slight increase on the ratio (31·59) for 1912.

The total strength of the Army, amounting to 210,356 warrant and non-commissioned officers and men, may be divided into three groups[1]: half of the troops (105,659) were serving at home, the remainder were either serving in India (70,755) or in the various colonies and dependencies of the Empire (34,904). As compared with 1912, there is an increase in the admission-rate to hospital for the whole force (437·7, compared with 426·3 per 1000); for India in the ratios for admission (580·5, compared with 547·9), constantly sick (29·68, instead of 28·86), and invalids sent home (7·49, instead of 6·68); and for the United Kingdom in the ratios for admission (357·4, compared with 346·4), invaliding (9·49, instead of 9·37), and death (2·60, compared with 2·34). The constantly sick ratio for home stations, the death ratio in India, and all the ratios for the colonies are lower than in 1912.

Recruiting.

The number of candidates for enlistment inspected from Oct. 1st, 1912, to Sept. 30th, 1913, was 42,977, compared with 47,008 in 1911–12, and an average of 58,079 in the decennium 1903–12; that is, a decrease of 15,102. This decrease is attributed to increased competition by the Royal Navy, to continued activity in trade and emigration, and to the facilities for getting work now provided by the Government Labour Exchanges, also to increased care on the part of the recruiting sergeants in selecting men for enlistment. The rejection ratio on medical examination, which had averaged 301 per 1000 in the decennium 1903–12, was only 202·5 in 1912–13. The chief causes of rejection were defective vision (21·97 per 1000), loss or decay of teeth (21·08), under chest measurement (18·03), and disease or disorder of the heart. The rejections for defective vision are practically the same as for the two years preceding, though less than the decennial average (26·98), but for the last three years a considerable relaxation in the standard has been allowed. For the right eye 6/6 is required, and in the left eye the vision may be only 6/60; but in certain corps, if the *left* eye can see 6/6, the recruit would be accepted, even with 6/60 in the right eye, for employment as a driver. Loss or decay of teeth, causing 21·08 per 1000 rejections, compared with 22·44 in 1911–12 and 54·62 in 1903–12, does not indicate an improvement in the teeth of the rising generation, but merely means that recruits are now accepted, even if they do *not* have "a sufficient number of sound teeth for efficient mastication," provided that they can receive "such treatment as would enable them to be passed as fit for enlistment." It is to be hoped that the attention that is now being paid to the condition of school-children's teeth throughout the country will lead to improvement in the teeth of the young adult generally. Defective chest measurement caused only 18·03 per 1000 rejections, as compared with an average of 47·06 in the preceding decennium. The average minimum of those accepted was 33·2 inches and the average maximum 35·6 inches, as compared with 33·4 and 35·7 for the decennium. Heart disease (or disorder) caused 28·67 rejections per 1000, of which 12·89 were ascribed to valvular disease; the remaining 15·78 per cent. consist of cases of "disordered action," including tachycardia due to excessive smoking, and fugitive functional murmurs. Less importance is now attached to

[1] The statistics in this Report refer to conditions prevailing before the war.

such conditions and there are consequently likely to be fewer rejections under these headings. Of the whole body of recruits finally accepted (excluding those under 18) the average age was 19·7 years, height 66·2 inches, minimum chest measurement 33·2 inches, maximum chest measurement 35·6 inches, range of expansion 2·6 inches, and weight 127·7 lb. These figures are practically the same as the average of the decade 1903–12. The standard was therefore being maintained. It is stated, however, that many recruits enter in very poor condition, "and until they have been well fed for a short time and given moderate exercise they are quite unfit for their work on the square or in the gymnasium." With plenty of good food and careful physical training by graduated exercises the improvement is very great, being shown in a general way by the look of health and smartness of bearing, and especially by the rapidity with which the pulse-rate returns to normal after exertion, and by the manner in which backward recruits become alert.

Invaliding.

The ratio for invaliding out of the service was 7·88 per 1000, contrasting favourably with the preceding quinquennial average of 8·88 (1908–12). The most important classes of disease rendering a man unfit for service were, as usual, those of the nervous system (1·42 per 1000), especially epilepsy (0·62) and melancholia (0·18 per 1000); of the circulatory system (1·02), and tuberculous affections (1·31). These ratios are, however, less than the quinquennial averages for the nervous and circulatory diseases (which had been 1·61 and 1·38 respectively), but slightly in excess of the tuberculous figure (1·29) for the preceding five-year period. Only 27 men were invalided for syphilis (0·12 per 1000). The average for 1908–12 was 0·21, and for 1892–1901 it was 1·26 per 1000. The beneficial effects of modern methods of prevention and treatment are obvious.

Vaccination.

During 1913 there were 4219 children in Army families vaccinated primarily (at home and abroad), with a percentage success of 91·3; of these, 2685 received lymph from a Government establishment, giving a percentage success of 97·1. There were also 1197 children revaccinated, with a total percentage success of 76·6: with Government lymph this was 94·1. The recruits revaccinated with Government lymph numbered 16,875, with a percentage success of 91·4; in addition, 19 were vaccinated from other sources, with 84·2 per cent. success. The soldiers revaccinated numbered 14,982, of whom 3820, with Government lymph, gave a percentage success of 86·2; while for 11,162 revaccinated from other sources the corresponding ratio was 51·7 per cent. It is obvious from these figures that revaccination of the young adult is absolutely necessary to afford protection; it also appears to be the case that infant vaccination is often inefficient, otherwise revaccination of children (with Government lymph) would not give a successful percentage of 94·1.

HEALTH OF THE TROOPS IN THE UNITED KINGDOM.

The following short table shows the improvement that has taken place of late years in the health of the Army at home. The figures are ratios per 1000:—

	Admissions.	Constantly sick.	Deaths.	Invalids.
1889–98	712·5	41·14	4·32	16·98
1908–12	368·9	21·13	2·53	10 64
1912	346·4	19·50	2·34	9·37
1913	357·4	19·16	2·60	9·49

The slight cases of sickness treated in barracks averaged 7·10 per 1000 constantly sick in addition; this combined with the hospital ratio gives 26·26, being 0·48 per 1000 less than in the previous year. It seems probable that there will be little, if any, further reduction in the amount of sickness, or invaliding, or in the death-rate of the troops serving at home.

The admissions were highest in the London district (480·5 per 1000) and lowest in the Scottish Command (208·1); the average number constantly sick was also highest in London (28·89), and was lowest in the Western Command (10·62). Comparing the different arms of the Service the Household Cavalry have the highest admission rate (595·7) and the Foot Guards the greatest number constantly sick (27·61). For the infantry of the Line the corresponding ratios were 381·9 and 20·98 per 1000. The diseases causing most mortality at home were pneumonia (with 26 deaths), pulmonary tuberculosis (25 deaths), and appendicitis (13 deaths). The greatest amount of inefficiency from sickness was caused by venereal disease (4·57 per 1000, forming 23·9 per cent. of the total), but both actually and relatively there is an improvement on the preceding year and on the quinquennium; the chief causes for invaliding out of the Service were tubercular disease (1·46 per 1000, of which 1·29 was pulmonary), nervous diseases (1·01), and valvular heart disease (0·93 per 1000).

INDIA.

The strength of troops serving in India during 1913 averaged 70,755 warrant officers, non-commissioned officers, and men. Their health continued to be satisfactory, as is shown in the following abstract of ratios per 1000 of strength:—

	Admissions.	Constantly sick.	Deaths.	Invalids.
1889–98	1464·7	89·61	16·43	27·95
1908–12	638·5	35·03	6·02	9·19
1912	547·9	28·86	4·62	6·68
1913	580·5	29·68	3·26	7·49

There is a slight increase in the admission ratio over the preceding year (as there had been in 1912), and the constant inefficiency from sickness and the invaliding are practically the same as before; but the death ratio shows a marked improvement, as is the case in all particulars compared with the quinquennial average; the improvement is still more noticeable on comparison with the statistics of the decennium before the South African War. The admissions are about two-fifths, the constantly sick one-third, the invalidings little more than one-quarter, and the deaths less than one-quarter of the average 1889–1898. With regard to the increase in the admission ratio compared with the three preceding years, it is stated that there has been a prevalence of malaria, sandfly fever, and dengue in the Northern Army, and that a large number of cases of ear disease have been admitted to hospital that would formerly have been treated as out-patients in barracks.

There were three large stations that showed very high admission ratios—Lahore (1252·2 per 1000), Rawal Pindi (1122·9), and Peshawar (1007). The average numbers constantly sick were also high in these stations, the figures being 44·68, 44·00, and 38·65 per 1000 respectively. The death-rate was high in Rawal Pindi (5·36), moderate in Lahore (3·49), and extraordinarily low in Peshawar (1 death = 0·59 per 1000). The highest death-rates at large stations with over 1000 troops were experienced at Fort William (8·39), Rangoon (7·81), and Karachi (6·24).

The disease that caused the greatest number of admissions has been, as always, malarial fever (125·5 per 1000). This is less than the quinquennial ratio (1908–12) of 149·5, but higher than the figure for 1912, which was 82·4 per 1000. Sandfly fever (28·9) was rather less prevalent than in 1912, when the ratio was 30·5. The quinquennial average was 11·4. Pyrexia of uncertain origin caused only 15·6 admissions per 1000, a great reduction on the quinquennial average of 43·9, due presumably to more accurate diagnosis. It is stated (p. 44) that "the term is used to include practically all pyrexial states that cannot be clearly designated in any other way, the duration of the fevers so classified varying from days to months. Under this head are probably embraced undiagnosed enteric, paratyphoid, sandfly and malarial fevers, influenza, gastro-intestinal disturbances, &c." For malaria, sandfly fever, and pyrexia of uncertain origin, the total admission ratio was 170·0 per 1000 in 1913, and 204·8 in the preceding quinquennium. Venereal diseases caused 52·5 admissions per 1000, compared with 61·0 in the preceding quinquennium; the average number constantly sick, that is, the inefficiency due to these affections, was 6·90 per 1000, compared with 7·85 in the quinquennium: there is a continuous improvement, and, when the statistics of former years are referred to, the condition of things is seen to be altogether different: the average venereal admission rate in the decennium, 1889–1898, was 383·8 per 1000, and the average number constantly sick was 32·81 per 1000. The most fatal diseases were enteric and paratyphoid fevers (0·26 deaths per 1000), inflammation and suppuration of the liver (0·24), and pneumonia (0·23 per 1000).

Although enteric fever is of nothing like the same importance nowadays as was formerly the case in India, when (as in 1898) it accounted for 50 per cent. of the deaths occurring among British troops (2375 cases and 654 deaths, the ratios being 36·3 and 10·0 per 1000 respectively), it still holds the highest place in the mortality table. There were 85 cases and 16 deaths; in addition, there were 79 cases of paratyphoid A, with 2 deaths. For both together the admissions numbered 164 and the deaths 18, the combined ratios being 2·3 and 0·26 per 1000. The Report states that "there were fewer cases of enteric fever and a lower mortality from that disease in 1913 than in any previous year. This diminution is more striking than at first sight appears, for with modern methods of diagnosis it is probable that a smaller proportion of cases of both enteric fever and paratyphoid fever escape detection." The improvement was still continuing. In the previous year (1912) there had been 118 (or, including paratyphoid A and B, 182) cases and 28 deaths, giving ratios per 1000 of 1·7 (or, including paratyphoid, 2·7) admissions and 0·40 deaths.

Of the 85 cases of enteric fever in the whole army in India, 57 were admitted from three out of the ten divisions that compose the European Army in that country—viz.: 27 from Rawal Pindi, 18 from Poona, and 12 from Secunderabad. From Lucknow there were admitted 35 cases of paratyphoid A, but only 6 of enteric; and from Poona came 13 cases of paratyphoid A. In the Rawal Pindi division 13 out of the 27 cases occurred in Rawal Pindi itself. There were 4 cases in September, and the remainder were spread over the rest of the year. It is stated that "it was found impossible to trace the source of origin of any of the 13 cases"; no carrier was discovered. Eight cases occurred in the 21st Lancers, recently arrived from Egypt, where they had been seriously affected with enteric in the preceding year. In the same division 9 cases occurred at Sialkot; no cause could be traced. Of the 18 cases in the Poona division, 11 occurred at Poona itself. There were 79 admissions for paratyphoid fever, with only two deaths. There were no cases in Rawal Pindi. The principal prevalence was in Lucknow, Fyzabad, and Kamptee; all cases were due to *B. paratyphosus A*, this organism being detected either in the blood, fæces, or urine. All of these 79 cases (except one) had been inoculated against enteric fever. Trials were subsequently made with an antiparatyphoid vaccine prepared at the Royal Army Medical College. It is stated that evidence is accumulating that the indigenous population suffer from paratyphoid fever to a certain extent, and that it is probably more or less endemic in the country. The need for bacteriological examination of all servants and followers is now getting to be recognised. Anti-enteric inoculation progresses satisfactorily, over 93 per cent. of the European troops having been so treated, and in some units every officer and man has been inoculated. All native cooks, mess servants, and others engaged in handling food are now inoculated as a matter of routine. The admission and death-rates per 1000 for enteric fever among the inoculated soldiers are 0·9 and 0·12 of inoculated strength respectively. Among the non-inoculated soldiers these ratios are 5·3 and 1·75 of non-inoculated strength. Combining enteric and paratyphoid fevers, the inoculated ratios are 2·10 and 0·15, and the non-inoculated ratios 5·50 and 1·76 respectively. Re-inoculation is recommended after two years. The important statement is made that "some infantry battalions have not had a case of enteric for over two years, and it has been ascertained that in these units Indian cooks are not employed and inoculation has been adopted by all ranks almost universally." The conclusion is arrived at, on a survey of all the circumstances, "that the progressive decline in the prevalence of the disease is due to the high proportion of men protected by anti-enteric inoculation, the detection of 'carriers' in barracks, the elimination of convalescents by sending them to special enteric depôts in the hills, the practice of night-soil incineration, and consistent effort in improving the sanitary condition in barracks and their surroundings." There can be no gainsaying such a conclusion; it is comprehensive and fairly obvious; for the present, apparently, there can be no relaxation of vigilance either in general sanitary measures or in the special prophylactic methods employed.

"Malaria continues to be the dominating cause of inefficiency in European troops in India." The ratio of admissions per 1000 was highest in the Rawal Pindi (288·1) and Peshawar (274·6) divisions; in Pindi itself the admissions were 564·7 per 1000; "the increased incidence is attributed to the presence in and about the cantonment of a heavily-infected indigenous community, the intermittency of the rains

and the prolongation of the hot weather into November." 56 cases were found to be of the malignant tertian type. In Peshawar 134 cases were of this type. It is stated that larvæ of *M. culicifacies* were found in the fire-tanks at the arsenal at Pindi, and that at Lahore anopheline *mosquitoes* were numerous, also that numerous water channels, with general water-logging of the soil, foster their breeding; anophelines are abundant at the brickworks within half a mile of the barracks. At Karachi also the admission rate (359·9 per 1000) greatly exceeded that of 1912; the battalion chiefly affected occupied "lines through which runs a large *nul'ah*, in which a great deal of water lodges in the rains." All these excessive prevalences of malaria are therefore explained; but no explanation is afforded how it happened that such well-known fever-producing conditions were allowed to exist in the year 1913. It is stated that "the work of reducing the breeding places of anophelines is tedious, exacting, and requires unremitting attention and supervision, and in the absence of radical and prohibitively expensive operations it has to be carried out year after year." Proximity to bazaars and lack of active coöperation on the part of the civil authorities also tend to neutralise prophylactic measures in cantonments. There seems to be a note almost of despair in regard to the whole matter. It would appear that some vigorous action on the part of Government is required to compel "the civil authorities" to put a stop to the propagation of disease amongst the British troops—that is, to prevent the latter being poisoned by the insanitary conditions prevalent in the civil areas. "The question of the provision of mosquito nets presents many difficulties. Except in a few places nets are not provided by Government. ..... In several reports it is stated that the punkah coolies were infected with malaria; in one station (Fort Govingarh, Amritsar) 84 per cent. were so infected." Electric fans are recommended, so that the cooly may be eliminated. The survey of malarial stations, with a view to systematic eradication of malarial conditions, is required. "There are instances of stations where formerly malaria was both prevalent and malignant in which it is now so mild as not to call for quinine prophylaxis."

In contrast with the unsatisfactory condition of matters in regard to malaria prevention may be mentioned the absence of plague and the practical absence of cholera (5 cases, 1 death) and small-pox (14 cases, 1 death). There were 746 cases of dengue, 310 cases occurring at Ambala; at three stations it was suggested that *Stegomyia calopus* may be a carrier; but at Dinapur the most careful use of mosquito-nets at night did not stop the spread of the disease.

OTHER STATIONS ABROAD.

In Egypt, where the force numbered 5618, the admission ratio (415·5) and the ratio of constantly sick (28·86) were both considerably below the quinquennial averages of 568·1 and 36·95 per 1000. The death-rate (3·74) was also less than the average (3·98). Most of the troops are stationed in Cairo. There were only 6 cases of enteric fever (all in Cairo), one of whom was an orderly of the Royal Army Medical Corps who had been nursing an enteric patient. There were five cases of Mediterranean fever; the cause could not be traced; only tinned milk is used by the troops. In 1912 there had been 39 cases of *Bilharzia hæmatobia* infection, which caused the invaliding out of the service of 19 men. It was suspected that infection came from the use of the floating bath in the Nile. This was discontinued, shower-baths being substituted. In 1913 the garrison was quite free from the disease. Beri-beri appeared for the first time in this command; there were 17 cases, all in the Welsh Regiment, with 1 death. The outbreak died down as soon as improvements were made in the vegetable ration. In Gibraltar and Malta the health of the troops was satisfactory. There were no cases of Mediterranean fever at Gibraltar, and in Malta there were only three, two of whom admitted drinking goats' milk. In South Africa the strength of the garrison was reduced from 10,488 in 1912 to 6703 in 1913, the stations of Harrismith and Tempe being no longer occupied. All the ratios are higher than in 1912, and all (except the admission-rate) are higher than the quinquennial average (1908–12); this is stated to be due to the excessive prevalence of venereal disease. For the whole command the venereal admission ratio was 70·7; in the Cape peninsula the ratio was 198·2 per 1000, and at Wynberg 42·2 per cent. of the admissions to hospital and 54·9 per cent. of the average constantly sick were due to this cause. The total admission ratio for South Africa was 353·9, the average constantly sick 24·69, the deaths 3·88, and the invaliding 17·45 per 1000: the corresponding ratios for 1908–12 were 355·3, 21·04, 3·77, and 5·97 per 1000. In West Africa, Bermuda, Ceylon, South China, Jamaica, Mauritius, and the Straits Settlements the health conditions have been, on the whole, satisfactory, with less sickness than in recent years; this has been particularly noticeable in Bermuda, Jamaica, Mauritius, and the Straits Settlements. In North China the admissions (649·8), invaliding (11·88), and average constantly sick (46·03) have been in excess of the quinquennial average, due chiefly to malaria (103·3 admissions per 1000) and venereal disease (246·4).

The report is somewhat late in its appearance, but considering the conditions that prevail at the present time the authorities are to be congratulated on having succeeded in producing it at all. It is a model of clearness of arrangement and accuracy in printing, and will be of permanent historic value as exhibiting the health conditions of the British Army immediately before the outbreak of the European War, after the conclusion of which there may be great changes in matters military and medical, as well as in the map of Europe.

Surgeon-General Sir Pardey Lukis's term of office as Director-General of the Indian Medical Service has been further extended for one year to Dec. 31st, 1918, when he will have occupied this high office for nine years.

A HEALTH visitor has just been appointed at Camborne (Cornwall) by the local urban council. The infant mortality rate in the district is stated to be 30 per cent. higher than the average rate for England and Wales.

Correspondence.

"Audi alteram partem."

MALARIA CONTRACTED IN ENGLAND.

To the Editor of THE LANCET.

SIR,—In your issue of last week is an account of a case of malaria said to be contracted in England. In reading the description of the case the evidence for deducing that the infection was contracted in England seems to be totally inadequate. The patient was in Salonika, a noted centre for malarial infection, last year, and there seems to me every reason for supposing that the infection was contracted there, and the attack which he has recently had is only a relapse of the old infection.—I am, Sir, yours faithfully,

H. B. NEWHAM, M.D. Durh., M.R.C.P. Lond.,
Director, London School of Tropical Medicine, Royal Albert Dock, E.
Oct. 8th, 1917.

THE STATUS AND FINANCIAL POSITION OF THE LONDON LOCK HOSPITALS.

To the Editor of THE LANCET.

SIR,—A great deal of misapprehension seems to exist in both medical and lay minds regarding the position of the London Lock Hospitals, so, at the request of the board, I have been desired to write asking you to be so kind as to insert this explanatory letter, in the hope that it will clear away any misconception that may exist.

The Male and Female Lock Hospitals, which were founded in 1746, have been the principal centres for the treatment of venereal diseases in England since that date, and on the coming into force of the Venereal Diseases Regulations, 1916, the Lock Hospital immediately applied for approval under the new scheme. This was granted by the Local Government Board at the close of last year, and a grant-in-aid is now received at both institutions towards the work being done; but the Lock Hospitals have always dealt with large numbers of cases, in addition to those treated within the London County Council area, and experience has proved during the last nine months that more than ever is the hospital called upon to deal with cases of venereal disease that do not come within the scope of the new scheme, which, it must be remembered, only applies to venereal diseases in their early and communicable stages.

After allowing for the grant-in-aid referred to above, the hospital has to raise in voluntary contributions a sum estimated at over £9000 per annum, and the board earnestly desire that the medical and the lay public should realise the true position of the Lock Hospitals at the present time, when an idea appears to exist that the hospitals are entirely supported by grants from the Local Government Board, an impression which may seriously damage any efforts to obtain the necessary funds to carry on the important work at both institutions.—I am, Sir, yours faithfully,

J. ERNEST LANE,
Major, R.A.M.C., Member of the Board of Management and Chairman of the Medical Committee.
London Lock Hospital and Rescue Home, Harrow-road, London, W., Oct. 4th, 1917.

BREAST-FEEDING AND THE NERVOUS INFANT.

To the Editor of THE LANCET.

SIR,—Dr. H. Waller writes kindly, in your issue of Sept. 22nd, on my note on nervous unrest in the newly born, but disagrees. He will have nothing to do with my views that in many babies digestion and appetite and the power of suction are all inhibited by excessive crying and emotional display with its accompanying vasomotor changes and the setting free of internal secretions. He is clearly right when he urges that a complete physical examination of the child should be made to search for any cause for the failure to nurse, but he does not appear to appreciate that in saying so he is only restating the main contention in my papers. I drew up a long list of such causes to be found in the child—and in it I included Dr. Waller's example of birth trauma—but added later that in many children no such cause was to

be found, and that the difficulty was then to be accounted for by the unstable nervous system of the child. Dr. Waller does not believe it, yet I feel sure that when he expounds the physiology of digestion to workers in infant welfare, he does not omit reference to the teaching of Pawlow on the dependence of gastric secretion upon the emotions or substitute for it entirely his own views upon the ill effects of giving the mother an enema or a dose of salts.

When a baby, after birth, has dyspepsia, cries ceaselessly and passionately, mothers and nurses are quick to blame some article of diet or some medicine the mother has been given. To them it admits of no doubt that the milk disagrees with the child because it contains something harmful. I do not believe that there is often truth in this contention. The same milk can be used for another child without ill results. The disturbance is in the child. It was the hope of upsetting a little the belief in these traditional views, to which Dr. Waller calls my attention, that made me write as I did. With him at least I have failed. He even adds to my confusion by detailing these observations of his own upon the toxic properties of milk derived from mothers who have had an enema or who have carious teeth.

I am, Sir, yours faithfully,

Devonshire-place, W., Oct. 2nd, 1917. H. CHARLES CAMERON.

THE DIAGNOSIS OF HORSESHOE KIDNEY.

To the Editor of THE LANCET.

SIR,—I am induced by Dr. David Newman's article entitled "Horseshoe Kidney Diagnosed Prior to Operation," which appeared in THE LANCET of August 18th, to send you this brief note. Evidently it was not known to the author that in December, 1915, I determined, *exclusively* by radiological investigation, the diagnosis of horseshoe kidney in a case where the condition was confirmed by the operation. At the same time I described the complex of radiological symptoms of this abnormality, which were unknown up to that moment, and fixed the typical image of it (*vide* the report of the Dutch Society for Electrology and Roentgenology of May 21st, 1916, in the *Nederlandsch Tijdschrift voor Geneeskunde*, 1916, ii., p. 1250).

Dr. Newman could not be aware of my case, for on account of the war the international publication of my paper, which will appear in the next number of the *Journal de Radiologie*, was retarded. I am, Sir, yours faithfully,

Amsterdam, Sept. 28th, 1917. N. VOORHOEVE.

THE EFFECT OF PITUITRIN ON BLOOD PRESSURE.

To the Editor of THE LANCET.

SIR,—Dr. Edith M. N. Green's article on blood pressure and surface temperature in 110 cases of shell shock in your issue of Sept. 22nd has a bearing on other conditions in which arterial pressure is depressed, and the charts and other records tend to confirm the value of pituitary extract in some of these conditions.

Dr. Green's paper would be of enhanced value if she would kindly inform your readers: (1) Whether "blood pressure" is intended to signify systolic pressure; (2) whether the diastolic pressure was taken in any of the cases; (3) whose make of pituitary remedy was used, so as to give a clearer signification to "pituitary fluid" and extract; and (4) whether the whole gland or the posterior or anterior lobes alone, were made use of.

I am, Sir, yours faithfully,

Devonshire-place, W., Oct. 1st, 1917. R. HINGSTON FOX.

A STATE-AIDED MIDWIFERY SERVICE.

To the Editor of THE LANCET.

SIR,—In referring to your article in THE LANCET of Sept. 29th on the memorandum for State-aided midwifery put forward by this association, may I point out that there has apparently been some little confusion between the proposals of this association and the scheme so ably thought out by Dr. E. W. Hope, of Liverpool?

Dr. Hope, in his admirable address at the meeting of this association in July, spoke of the success of the efforts of the State to improve the position of the midwife, but that it was necessary to go much further, and it is with the hope of covering the whole field (with the welfare of the mother and child as the first objective) that the memorandum issued by this association has been formulated. It is estimated that its provisions will cost the country a million a year (not £100,000), but this sum would, undoubtedly, be repaid over and over again if they secure to every mother the skilled attention necessary for the well-being of herself and her child. I am, Sir, yours faithfully,

EMILY F. FORD,
Secretary, Association for Promoting the Training and Supply of Midwives.

Dacre House, Westminster, S.W., Oct. 3rd, 1917.

*** Having read again the proposals put forward by the association for a State-aided midwifery service, we see how we were led to mistake our previous correspondent's accurate notes. We are glad to publish Miss Ford's correction.—ED. L.

THE TREATMENT OF IMPETIGO AT THE FRONT.

To the Editor of THE LANCET.

SIR,—Impetigo and its treatment is a considerable source of difficulty to the medical officer in charge of a unit on active service. Especially does this apply to artillery units, which are sometimes many weeks in the "line." Under these circumstances it is very difficult for the men to obtain baths and clean underclothing. In consequence a fair number of men get impetigo. I tried various remedies, such as the unguentum hydrargyri ammon., ung. acid. borici, covering the affected parts with plain lint afterwards. The results were disappointing. Then tinct. iodi painted on the affected parts and afterwards covering the area, as in the former treatment, with plain lint. This certainly gave considerably better results.

The best results, however, have been obtained by using methylated spirit. The procedure adopted was first of all to remove the crusts with boric fomentations, and then swabbing the area affected by impetigo with methylated spirit. Within a few days the relief was very marked. All the affected parts were covered with plain lint, secured in position either with a bandage or strapping.

I thought the above treatment would interest your readers, especially those who are on active service on the Western Front.—I am, Sir, yours faithfully,

FRANK HARVEY,
In the Field, Sept. 3rd, 1917. Captain, R.A.M.C. (T.).

COLOUR WARDS IN HOSPITALS.

To the Editor of THE LANCET.

SIR,—With regard to the end of the annotation in your issue of last week on the use of colour in hospital wards, I shall be pleased to supervise colour schemes for any hospital in London or other town. I do not take any money for such supervision. I am, Sir, yours faithfully,

H. KEMP PROSSOR.

11, South Eaton-place, S.W., Oct. 8th, 1917.

Corrigendum.—In the address at the foot of Mr. Edred M. Corner's letter, in our last week's issue, calling attention to a War Memorial for Old Epsomians, a figure has broken off. It should read *37*, Harley-street

THE COLLEGE OF AMBULANCE.—The Bishop of London, who presided at the opening of the fourth year of the work of the college on Monday, Oct. 8th, announced the offer of what he termed a "parsons' ambulance" for the front line service. Incidentally Dr. Ingram mentioned the experience of a rescuing party of 50, including his own chaplain, who were out for 4½ hours in a heavy barrage and succeeded in bringing in, without one of the rescuing party being hit, 12 men who had lain out for three days and three nights. On the motion of Sir Malcolm Morris, seconded by Professor J. G. Adami, a resolution was passed to the effect that the work done justified the existence of the college, and the Bishop of London was made the first honorary fellow. Colonel James Cantlie said that the number of students who had passed through the college, which was founded in 1914 as a teaching institution, exceeded 14,000. All communications should be made to Mrs. Colin Macdonald, the secretary, 3, Vere-street, London, W. 1.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Lieut.-Col. J. J. Nicholas, Australian A.M.C., qualified at Melbourne in 1911.

Capt. H. D. N. Mackenzie, R.A.M.C., attached Royal Field Artillery, was educated at Edinburgh University and at Middlesex Hospital, London, and qualified in 1893. After holding appointments at the North-West London Hospital, the Birmingham General Hospital, and at the Throat Hospital, Golden-square, London, he travelled abroad and served as a civil surgeon in the South African War. Later he became a special plague medical officer in India and Egypt, and prior to the outbreak of war was in practice at Corowa, New South Wales. He joined the R.A.M.C. towards the end of 1915 and did duty at the Dardanelles, in Egypt, and on the Western front.

Capt. J. P. Pegum, R.A.M.C., attached Shropshire Light Infantry, qualified in 1916, and thereupon joined up.

Capt. T. J. Golding, R.A.M.C., qualified in Ireland in 1906, and was in practice in Cork before joining the R.A.M.C.

Died of Wounds.

Capt. H. D. Field, R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified at the latter end of 1914. After holding an appointment at the Royal Victoria Hospital, Bournemouth, he joined the R.A.M.C. in April, 1915.

Died.

Capt. J. W. Pettinger, R.A.M.C., was educated at Cambridge and at St. George's Hospital, London, and qualified in 1899. He was in practice at Kingsbridge, South Devon, before joining up, and died of pneumonia at the Military Hospital, Aldershot.

Wounded.

Lieut. F. H. Fuller, R.A.M.C., attd. Royal Garrison Artillery.
Capt. M. B. Lawrie, M.C., South African M.C.
Capt. G. W. Armstrong, R.A.M.C., attd. North Staffs Regt.
Lieut. J. Rickards, M.C., R.A.M.C., attached Royal Scots.
Surgeon A. G. Williams, R.N.
Major G. Craig, New Zealand M.C.
Capt. G. Redpath, New Zealand M.C.
Capt. F. W. Chamberlain, R.A.M.C., attached Loyal North Lancs Regiment.
Col. J. W. H. Houghton, R.A.M.C.
Lieut. W. B. Thomson, R.A.M.C.
Major G. A. Heydon, M.C., Australian A.M.C.
Major W. W. S. Johnston, M.C., Australian A.M.C.
Capt. F. E. Johnson, R.A.M.C., attached Oxford and Bucks Light Infantry.
Lieut. W. P. S. Johnson, R.A.M.C., attd. East Yorks Regt.
Lieut. M. S. Munro, R.A.M.C., attd. West Yorks Regt.
Capt. E. Scott, D.S.O., R.A.M.C.
Capt. C. P. Symonds, R.A.M.C., attd. Royal Field Artillery.
Capt. D. S. Cassidy, R.A.M.C., attached Berkshire Regiment.
Capt. R. McC. Hill, D.S.O., R.A.M.C., attached Argyll and Sutherland Highlanders.
Capt. H. F. Warwick, R.A.M.C.
Capt. W. A. Rees, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Commander R. H. Graves-Burton, R.D., R.N.R., died suddenly, youngest son of Surgeon-Major R. Graves-Burton, of Ealing, London.

Major F. M. Armstrong, Royal Field Artillery, killed in action, son of the late Dr. J. F. Armstrong, of South Shields.

Flight Sub-Lieut. E. C. Hillaby, R.N., killed in action, second son of Dr. A. Hillaby, of Pontefract.

Sergeant-Major F. P. Hewkley, Australian Imperial Force, died of wounds, only son of Dr. F. Hewkley, of New Cross.

Second Lieut. L. A. Joscelyne, M.C., Somerset Light Infantry, killed in action, only son of Dr. A. E. Joscelyne, of Taunton.

Major W. G. Harington, D.S.O., Indian Army, died of wounds, elder son of Lieut.-Col. H. N. V. Harington, I.M.S. (retired).

Lieut. J. T. Willis, Royal Flying Corps, killed in action, only son of Dr. J. G. Willis, of Ilkeston, Derbyshire.

Capt. J. W. Pettinger, R.A.M.C., died of pneumonia, son of the late Dr. G. W. Pettinger, of Manchester.

Capt. E. R. Chetham-Strode, Border Regiment, killed in action, son of Dr. R. Chetham-Strode, of Wimpole-street, and Acton-hill, London.

OBITUARY OF THE WAR.

JAMES HENRY BAMPTON, M.B., CH.B., B.SC. BIRM.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. H. Bampton, who died of wounds on August 25th, at the age of 29 years, was elder son of Henry Bampton, L.D.S., of Gravelly Hill, Birmingham. He was educated at King Edward's Grammar School, Aston, and the University of Birmingham, graduating in science in 1908 and in medicine three years later. After filling resident posts at the General Hospital, Birmingham, he was awarded in 1913 the Walter Myers travelling scholarship, and spent 12 months in research work in bacteriology at Hamburg and Berne, publishing a thesis in the *Centralblatt für Bakteriologie*. He then obtained a post as assistant medical officer under the Birmingham Education Committee, which he resigned in February, 1915, on obtaining a commission in the Royal Army Medical Corps. He was engaged first on embarkation duty, and later on an ambulance-train and on hospital ships. At the beginning of 1917 he went to France, where he was attached to the Royal Flying Corps and subsequently to the Royal Field Artillery, when in the fulfilment of duty he met his death.



BERNARD WOODHOUSE, M.B., B.S. LOND.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain B. Woodhouse, who was killed on active service on Sept. 5th, was younger son of the late Lister Woodhouse, of Wimbledon. He was educated at Birkenhead School and Cheltenham College, afterwards taking his medical course at University College Hospital. Qualifying in 1913 he held resident appointments at Westminster and University College Hospitals before obtaining his commission in August, 1914. He had just completed three years' service at the front, when he received shrapnel wounds which proved fatal on the next day. At the time of his death he was attached to a Welsh regiment. One of Captain Woodhouse's teachers writes of him as a man who gave great promise of good things. His commanding officer wrote: "A man of great kindness and thoughtfulness for others, especially for the wounded and sick. We all loved him."



FREDERICK HARDIE, M.B., CH.B. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. Hardie, who died of wounds on Sept. 20th, at the age of 41 years, was a student of Edinburgh University, graduating there in medicine in 1900. After some time at Bentham he settled in private practice at Southampton, but in October, 1914, obtained a commission in the Royal Army Medical Corps, attached to a Wessex ambulance. Nine months later he was sent to France with a field ambulance, and after many near escapes he was killed by a shell from an aeroplane at his ambulance headquarters

just after returning from a tour of duty behind the trenches. His commanding officer writes of Captain Hardie's good work under trying and dangerous conditions. He leaves a widow and two children.

FRANCIS ARTHUR DERAVIN, M.B., CH.B. MELB.,
CAPTAIN, AUSTRALIAN ARMY MEDICAL CORPS.

Captain F. A. Deravin, who died suddenly on active service at the age of 41 years, was sixth son of the late J. T. Deravin, and was born at Bendigo, Victoria, and educated at the High School, Bendigo. After graduating in medicine at the Melbourne University, he was for some years resident surgeon to the Fremantle Hospital, Western Australia, and on resigning this position visited London for a year of post-graduate work. On his return to Australia he practised at Casterton, Victoria, until taking up duty in the Australian Army Medical Corps. He was well known in Australia as a keen exponent of all games of sport.

MINISTRY OF NATIONAL SERVICE: ITS MEDICAL ORGANISATION.

In his speech at Nottingham on Oct. 9th Sir Auckland Geddes outlined the new medical organisation, inaugurated by him at the Ministry of National Service, of which Dr. James Galloway is chief medical commissioner.

The New Recruiting Machine.

The various professional bodies in the United Kingdom are being closely linked up in the construction of a new recruiting machine, with a medical advisory board at its head, to which they send representatives. The country is divided up into a series of regions, each under a medical commissioner, who is provided by the responsible civilian medical organisation with a list of medical men of good standing in his area willing to serve on the medical boards. The president of each National Service medical board is a whole-time official of the Department, and is a civilian approved by the medical advisory board. He is assisted by a rota of local members, generally three at a time, who serve for a day or more in the week as is consistent with their work as medical practitioners. The boards work to standards settled by the Department, the instructions laid down amount practically to a text-book of medical standards in the preparation of which Dr. W. Hale White has given much help. The old categories, which were always administrative rather than medical in intention, have been done away in favour of four grades as follows: (1) Men organically sound, of good mental capacity and muscular development, and without any deficiency in their special senses. (2) Men organically sound and capable of standing exposure, but deficient in some special respect—e.g., short-sighted, deaf, flat-footed, and so on. (3) Men falling between grades (2) and (4). This grade is marked for whatever class of work the man is fit for. (4) Men so unfit as to make it unfair to expect them to undertake strenuous work at all.

Any man who has been examined by a National Service medical board and considers that he has new facts to bring before the board may apply for a fresh examination. If he thinks he has been hardly treated by their decision he may refer to the lay appeal tribunal for a re-examination. If a *prima facie* case is made out he is then examined by assessors appointed to groups of tribunals by the Local Government Board in England and the Scottish Office. Should the assessors find him unfit the Director of National Service accepts their decision as final.

First Meeting of the Medical Advisory Board.

The first meeting of the medical advisory board took place at the Ministry, Windsor Hotel, Victoria-street, on October 4th. The board consists of the Chief Commissioner, Dr. James Galloway, C.B., who is the head of the Medical Department of the Ministry, Sir Donald McAlister (General Medical Council), Mr. J. W. B. Hodsdon, President, Royal College of Surgeons, Edinburgh (Scottish Medical War Emergency Committee), Mr. Charles Ryall (Committee of Reference of the English Royal Colleges), Dr. T. J. Verrall and Mr. E. B. Turner (Central Medical War Committee), Professor Arthur Keith, and Dr. J. Arnallt Jones. Representatives of the Local Government Board, Scottish Office, Naval and Military Services, and National Health Insurance Commission attended.

Sir Auckland Geddes, who was in the chair, commented on the changed conditions under which medical examinations have to be conducted under the present compulsory military service, as compared with those of the early days of the war when all those presenting themselves were volunteers. Since the beginning of 1917, and especially since the Review of Exceptions Act, there had been, he said, a great deterioration in both the willingness and the fitness of men called upon to undertake military service. Medical boards had had to face in the past much abuse from persons who fostered unwillingness to serve and who took every chance which offered of discrediting the medical examination of recruits. He went on to describe the abuses which had arisen under the old system: Medical certificates of unfitness had been given on the scantiest evidence, personation had been rife, and even members of boards had been influenced by unworthy motives to place a man unjustifiably in a low category. 14,000 prosecutions had been instituted on charges connected with these abuses during the past 14 months. The Minister described the plans of the medical department of the National Service Ministry as nothing short of a medical survey of the male population of military age, in which he saw a scientific opportunity of great possibility. Arrangements were being made by the Ministry for the supply of medical men to all the Government departments, as well as to deal with the shortage of medical students at the schools. On all these matters the medical advisory board would be referred to for counsel and guidance, and Sir Auckland Geddes proposed to call upon it to enlist on his behalf the aid of the existing organisations of the medical profession in order that the Ministry of National Service might become a clearing-house in correlating medical activities with the requirements of the nation at large and those of the Navy, Army, Air Board, Local Government Board, Pensions Ministry, Scottish Office and National Insurance Commission. The work of nominating the medical boards had been, he said, referred to the Statutory Committees of the profession. Sir Auckland Geddes concluded by stating that the work of preliminary organisation, as outlined above, is being rapidly accomplished, and that the new system will be instituted on Nov. 1st.

THE WAR RECORD OF THE LONDON MEDICAL SCHOOLS: THE THIRD YEAR OF WAR.

We have received the following revised returns concerning the war record of the Middlesex Hospital:—

Joined the military branch of the Service, 374. Joined the naval branch of the Service, 47. Died, 24. Wounded, 38. Mentioned in despatches, 20. Prisoners of war, 3. Missing, 2. Torpedoed, 3. D.S.O., 2. Croix Rouge Française, 1. Croix de Guerre, 1. Military Cross, 9.

INDIAN MILITARY HOSPITALS.

The hospitals receiving overseas cases have been brought steadily up to date, with modern medical equipment and the provision of electric light and fans. Convalescent sections and depôts have been established for the reception of British and Indian soldiers discharged from war hospitals who no longer require in-patient treatment. Facilities exist for orthopædic and electro-therapeutic treatment of cases in hospitals at Bombay, Cawnpore, Umballa and the Red Cross hospitals at Mussoorie and Dehra Dun. British convalescent enteric depôts have been opened for the segregation of this class of case during convalescence. Lady nurses are employed in all British war hospitals, in station hospitals of any size, and in Indian war hospitals at Bombay, Poona, Rawal Pindi, Karachi, Secunderabad, and Meerut.

The St. John Ambulance Association at Simla has issued a letter amplifying a proposal to expand the service of the Voluntary Aid Division in India. It is believed that there will be no difficulty in obtaining a number of suitable candidates prepared to qualify for work in hospitals and prepared to give their services to supplement and assist the regular staff. All the work to be done by such ladies would be voluntary, and those who participated in it would not be liable to transfer from one station to another. Ladies willing to become hospital visitors or hospital nurses should be over 20 years of age and present certificates of proficiency in first-aid and home nursing.

HOSPITAL TREATMENT OF THE INVALIDED SAILOR OR SOLDIER.

Representatives of the honorary medical staffs of the voluntary hospitals of the County Palatine of Chester (and of some of those situate in the counties adjacent) and officers of the local Medical and Panel Committee met at Crewe on Sept. 29th to confer on the position of the honorary medical staffs of voluntary hospitals in undertaking the care of invalided seamen and soldiers under arrangement with the Ministry of Pensions. Dr. J. H. Marsh, of Macclesfield General Infirmary, chairman of the local Medical and Panel Committee, occupied the chair. The following resolutions were passed unanimously, and it was decided to submit them to the consideration of the various hospitals concerned, to the Ministry of Pensions, and to the county Pensions Committees:—

That the services of the medical profession should not be given gratuitously to patients who are maintained by public funds.

That from all payments received by the governing body of a voluntary medical institution from the State or local authority, a proportion to be agreed upon between the governing body and the honorary medical staff should be placed to a special fund which shall belong to the honorary medical staff.

A scale of charges was also resolved upon, the chief items being as follows:—

	£	s.	d.
For major operation, including anæsthetist's and assistant's fees	7	7	0
For minor operation requiring general anæsthesia, including an anæsthetist's fee	2	11	6
The anæsthetist's fee (included in the above fees) where the assistant is not a salaried resident medical officer	1	1	0
For minor operation with local anæsthetic	1	1	0
For attendance on in-patients (after operation or otherwise) for each week (For less than a week in proportion.)	1	1	0

"OUR DAY."—Red Cross work is now said to be costing the country something over £6 a minute, and next Thursday (Oct. 18th) an effort will be made to collect a sum of money sufficient to enable the Red Cross to carry on its beneficent work on behalf of the sick and wounded. Flags and emblems will be sold as usual on "Our Day" throughout the country, several metropolitan mayors have opened supplementary subscription lists, and social gatherings of various kinds will further the appeal. Helpers are needed, particularly for the South African section. Offers of assistance, gifts, and suggestions will be welcomed by Miss C. May Beeman, the organising secretary, 10, West Bolton Gardens, S.W. 5.—The Viceroy of India has fixed Dec. 12th for "Our Day" in India.—Americans in England are making a combined present to the British Red Cross Society for "Our Day," and contributions for this purpose should be sent to Mr. Clarence C. Stetson, care of The National City Bank of New York, 4, Bishopsgate, London, E.C. 2.

FIRST AMERICAN RED CROSS HOSPITAL IN EUROPE.—On Oct. 4th Mr. Page, the United States Ambassador, opened the first American Red Cross Hospital established in Europe at St. Katherine's Lodge, Regent's Park. The hospital, which will be for American and British officers, stands in four acres of grounds, and has been equipped for 50 orthopædic patients by Mr. and Mrs. William Salomon, of New York. Captain F. Kidner, of Detroit, and Captain the Forrest Willard, of Philadelphia, have been chosen as the nucleus of the medical unit under the general supervision of Colonel Sir Robert Jones. The nursing staff will be American, and a number of well-known British physicians and surgeons have signified that their services, for other than orthopædic work, are at the disposal of the hospital.

KING GEORGE'S FUND FOR SAILORS.—A special effort is being made to augment the funds of the various societies ministering to the needs of our sailors and their dependents under the auspices of King George's Fund for Sailors. The *Daily Telegraph* has been particularly associated with this effort, and has organised a campaign for making the appeal a national one, representing all classes of society. Lord Burnham points out a principal inducement to subscribe quickly in the fact that Christmas will bring the first distribution to the societies participating, so that the Press will in reality be providing a Christmas present to our sailors. The fund is not intended to interfere with subscriptions now being sent directly to the several institutions. Amongst others the appeal is supported by Prince Albert, the President of King George's Fund for Sailors; Sir E. Geddes, First Lord of the Admiralty; Admiral Sir J. R. Jellicoe, First Sea Lord; and Admiral Sir David Beatty, Commander-in-Chief of the Grand Fleet. The *Daily Telegraph* has made a contribution of £500 to the first list of subscriptions. Communications should be addressed to the *Daily Telegraph*, Fleet-street, E.C. 4.

Lieutenant-Colonel George Scott Williamson, R.A.M.C., the pathologist to the Bristol General Hospital, who went out into "No Man's Land" on August 26th with a stretcher company, is reported missing, and there is little doubt that he is a prisener in Germany. Colonel Williamson has been twice mentioned in despatches.

THE SERVICES.

APPOINTMENTS TO THE INDIAN MEDICAL SERVICE.

It has been announced in the Press that after the open competitive examination held in July, 1915, for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet absolutely indispensable needs of the Service would be made by nomination by the Secretary of State. To assist him in making these appointments, which, as already announced, will be limited in number to the absolutely indispensable needs of the Service, he has appointed a Selection Committee who will summon and interview such applicants as may appear to be *primâ facie* suitable, and make recommendations for appointment. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W. 1, and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, &c., in the Service can be obtained from the Secretary, Military Department.

ARMY MEDICAL SERVICE.

Col. C. H. Burtchaell, C.B., C.M.G., to be temporary Surgeon-General.

TERRITORIAL FORCE.

Capt. A. G. Hebblethwaite to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Major P. S. Lelean, C.B., relinquishes the rank of temporary Lieutenant-Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major H. W. Russell, Major G. H. Richard, Major E. H. M. Moore, Capt. R. E. U. Newman, M.C.

To be acting Lieutenant-Colonels:—Whilst in command of a Convalescent Depôt: Major H. H. Campbell, D.S.O., Major T. B. Moriarty, Major C. D. Myles, Capt. A. C. Elliott, Capt. A. F. Heaton, Reserve of Officers, Temp. Major J. Dalrymple, Major Reginald V. Cowey, D.S.O. Whilst in command of a Field Ambulance: Capt. C. E. Scaife, Capt. R. E. U. Newman, Major R. G. Meredith.

Temp. Lieut.-Col. E. F. Armstrong, Canadian Army Dental Corps, from a Canadian Infantry Battalion, to be temporary Captain.

Temp. Major A. A. Mussen (Major, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Temp. Capt. A. Macphail, Canadian A.M.C., to be temporary Major.

Temporary Captains, Canadian Army Dental Corps, to be temporary Captains: J. P. Coghlan, from Canadian A.S.C., J. L. McLean, from Canadian General List, C. Nicholson, from a Canadian Infantry Battalion.

Temporary Lieutenants to be temporary Captains: H. A. Lane, J. W. Wayte, M.C., A. S. Cook, A. J. M. Crighton, G. H. Sinclair, G. D. Compston, R. C. Allen, H. E. Scoones, C. T. I. Clarke, W. R. Wylie, B. W. Howell, W. I. Adams, C. B. Hutchinson, J. A. H. White, C. I. Stockley, R. H. Maingot, J. M. Adams, H. North, E. Williams, J. Maguire, H. Somerville, L. Kilroe, A. J. P. Nowell, H. Granger, W. L. Johnson, R. Cunliffe, J. E. Spence, J. W. Miller, E. D. Richardson, J. H. McAllum, S. C. Pritchard, H. Case, J. Forrest, S. F. Lusk, J. W. Elliott, H. Angel, R. T. Dobson, P. W. Leathart, P. Levick, A. H. Clarke, W. P. Pinder, F. L. Wood, D. L. Lindsay, A. J. Pirie, R. M. Fenn, P. Bowes, G. H. Wilkinson, T. Taylor, A. H. Wade, G. C. Belcher, J. H. Wilks, E. B. Hill, G. Hargreaves, W. Gibson, W. J. H. Hepworth, R. S. Kennedy, J. F. Elliott, L. H. Taylor, W. Arnott, J. F. Carroll, A. C. B. Biggs, A. L. Home, G. Fleming, F. W. M. Palmer, G. H. Ensing, L. Bathurst, A. T. Cooper, R. Edwards, G. J. Meldon, P. C. C. Smith, C. E. A. Wilson, C. W. Emlyn, A. Boothroyd, C. A. Birts, J. B. Cook, W. C. Sharpe, T. W. Pattinson, H. Blyth, J. B. Wall, B. B. Sapwell, A. A. Martin, R. W. S. Christmas.

To be temporary Captains: E. Watson, P. G. A. Bott (late Captain, Field Ambulance, R.A.M.C.), F. A. Cooke.

Temporary Honorary Lieutenants to be temporary Honorary Captains: C. C. Goodall and S. Morris.

To be temporary Lieutenants: T. Drysdale, H. G. P. Armitage, J. F. Allan, B. H. Peters, G. A. Wyon, C. J. Middleton, G. V. Allen, A. B. Waller, R. C. W. Spence, F. H. Whyte, G. Blair, J. T. Grierson, W. Fletcher-Barrett, W. M. Thomson, C. W. Alford, J. A. Stainsby, T. C. Hynd, F. D. Crew, H. G. G. Jeffreys, H. D. Wyatt, S. W. Green, W. Lock, G. Price, J. C. Ogilvie, D. A. Crow, F. C. Mason, P. McCool, J. Findlay, A. M. McCormick, G. A. Crowley, W. P. Bonner; A. J. D. Cameron, L. E. C. Handson, W. F. Cornwall, R. H. Calvert, E. G. Hodgson, J. B. Higginson Beatty, S. K. Hutton, A. R. Moir, D. H. Trail, H. M. Johnston.

To be temporary Honorary Lieutenants: O. C. Snyder, T. C. Bost, D. A. Bartley, W. L. Hanson, J. V. Ricci.

Officers relinquishing their commissions:—Temporary Captains: R. B. Lilly, J. A. Longley, K. B. Aikman, J. A. Cowan, C. Dickson, R. K. Sutherland, O. M. de Jong, N. A. Scott, J. S. Stewart, R. D. O'Leary, J. G. Greenfield, J. H. Ritchie, M.C., C. L. Dold, H. J. Burke,

M.C., S. A. O. MacKenzie, G. W. Kendall, H. M. Hart-Smith, J. D. Jones, J. T. MacKenzie, M.C., G. L. K. Finlay, E. O'Connor, A. W. Bourne, R. M. Alcorn, J. C. T. Teggart, L. C. E. Murphy, H. Wales, C. R. Hoskyn, F. J. Hathaway, W. J. D. Robertson, G. N. B. Sebastian, R. P. Graham, D. M. Gill, D. McKail, J. Macarthur, T. Milling, G. F. Gill, T. H. James, J. Crowley, D. St. C. Creighton, R. J. Kee, J. W. Darling, M.C., T. Campbell, A. Simmons, W. P. MacKasey, J. L. Gregory, A. Frew, H. S. Tait, I. Wilson, Temp. Capt. W. Allan (and is granted the honorary rank of Captain), Temp. Lieuts. P. D. Magowan (having ceased to be employed at the Lord Derby War Hospital), C. H. Bryan, A. Macrae, W. H. Roache (on account of ill-health), W. J. G. Johnson, S. R. Sibbald, J. L. Phipps, A. Macintyre, R. McC. Blair, F. Adye-Curran, E. W. Cross, C. J. B. Edmonds, E. J. Roberts, W. A. MacKay, J. W. Shields (on account of ill-health), R. Govan (on account of ill-health contracted on active service), F. Lilley, Temp Hon. Lieut. W. R. Rowlands (on ceasing to be employed with British Red Cross Hospital, Netley).

SPECIAL RESERVE OF OFFICERS.

Major J. C. Furness relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. W. H. L. McCarthy, M.C., to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

To be Lieutenants: J. G. McKendrick Macaulay and P. F. A. Grant (from Glasgow University Contingent, O.T.C.), A. B. Cocker, J. B. Irving, and J. W. Morris (from Glasgow University Contingent, O.T.C.).

TERRITORIAL FORCE.

Major T. D. Greenlees relinquishes his commission on account of ill-health.

Capt. J. P. H. Davies relinquishes his commission on account of ill-health.

Capt. W. H. P. Hey is restored to the establishment.

Capt. J. M. Fortescue-Brickdale is restored to the establishment.

Capt. (temp. Major) A. Leggat to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. K. W. Jones, D.S.O., is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Capt. R. Burgess, M.C., to be acting Lieutenant whilst commanding a Field Ambulance.

Capt. A. G. Hebblethwaite is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capts. L. L. Hanhan and J. Murdock relinquish their commissions on account of ill-health contracted on active service, and are granted the honorary rank of Captain.

Capt. G. H. Hart relinquishes his commission.

Capt. (temp. Major) A. C. Alport relinquishes his temporary rank on alteration in posting.

Capt. A. Iredale relinquishes his commission on account of ill-health.

Lieut. T. M. Metcalfe to be Captain.

W. T. Shields, 1st Battalion, Staffordshire Volunteer Regiment, to be Temporary Lieutenant and Medical Officer.

URBAN VITAL STATISTICS.

(Week ended Oct. 6th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·1, against 11·1 and 10·8 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 11·5, or 0·3 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·4 in Eastbourne, 4·0 in Derby, and 4·2 in Bath, to 17·4 in Rochdale, 18·0 in Cambridge, and 30·1 in Stockton-on-Tees. The principal epidemic diseases caused 375 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 278 from infantile diarrhœa, 33 from diphtheria, 26 from whooping-cough, 24 from measles, 8 from scarlet fever, and 6 from enteric fever. The deaths from diarrhœa, which had been 262, 344, and 267 in the three preceding weeks, slightly rose to 278, and included 72 in London, 17 in Liverpool, 16 in Sheffield, 14 in Manchester, and 11 in Hull. The 853 cases of scarlet fever and 1166 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 37 and 43 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 163 resulted from violence. The causes of 32 deaths were uncertified, of which 5 were registered in Birmingham, 5 in South Shields, and 4 in Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 10·7, against 11·6 and 11·9 per 1000 in the two preceding weeks. The 241 deaths in Glasgow corresponded to an annual rate of 11·3 per 1000, and included 10 from whooping-cough, 9 from infantile diarrhœa, 3 from diphtheria, 2 from scarlet fever, and 1 from enteric fever. The 74 deaths in Edinburgh were equal to a rate of 11·6 per 1000, and included 3 from infantile diarrhœa and 2 from diphtheria.

Irish Towns.—The 88 deaths in Dublin corresponded to an annual rate of 11·5, or 1·0 per 1000 below that recorded in the previous week, and included 7 from infantile diarrhœa, 2 from whooping-cough, and 1 from diphtheria. The 77 deaths in Belfast were equal to a rate of 10·2 per 1000, and included 6 from infantile diarrhœa and 1 each from enteric fever and measles.

LITERARY INTELLIGENCE.—The sixth edition, revised and enlarged, of "Tropical Diseases," by Sir Patrick Manson, is announced by Messrs. Cassell and Co. In view of the rapid advances in the study and treatment of tropical diseases, the author has subjected the book to a thorough revision. The chapter on Mosquitoes and the sections on Tsetse Flies and Ticks have been brought up to date by Lieutenant-Colonel Alcock, of the London School of Tropical Medicine.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the examination in Sanitary Science held recently the following candidates satisfied the Examiners in both parts of the examination:—

Alfred John Gibson, Captain, R.A.M.C.; Gerald Bovell Mason, Captain, R.A.M.C.: and Donald Wainwright.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology held on Sept. 27th and 28th and Oct. 1st and 2nd 79 candidates presented themselves, of whom 55 were approved and 24 were rejected. The following are the names and schools of the successful candidates:—

Thomas Adam, St. Bartholomew's Hospital; Marjorie Muriel Sibley Bartlett and Grace Mary Beaven, London School of Medicine for Women; William Ryding Bennette and Walter Bowler, Liverpool University; Percy Croad Brett, St. Mary's Hospital; John Piercy Brown, Liverpool University; Thomas Harold Burlend, University College, Cardiff; Kenneth Entwisle Bury, St. Thomas's Hospital; John William Chadwick, Manchester University; Sarah Annie Cooper, King's College; Philippe Couacoud, Guy's Hospital; Charles Owen Davies, Liverpool University; Edith Margery Pearce Davies, London School of Medicine for Women; Harold Spencer Davies, University College, Cardiff, and St. Bartholomew's Hospital; Michele Arcangelo Distaso, Naples University; Kenneth Henry Douss and Mohammed Nour El Din, St. Bartholomew's Hospital; Ralph Wilfrid Fairfax, King's College; Arthur John Gardham, University College; Frederick John Good and Barnett Gould, London Hospital; Egerton Charles Grey, Guy's Hospital; Sydney Hazeldine, University College; Frank Heber, London Hospital; George Hubert Howe, Guy's Hospital; William Vincent Hughes, St. Mary's Hospital; Edgar Francis Job Jones, Cardiff and St. Mary's Hospital; John Jones, Liverpool University and University College; Thomas Trefor Jones, Manchester University; Francis Knoyle, Middlesex Hospital; Gerald Joseph Wyld McMichael, Birmingham University and University College; Montague Maizels, University College; James Aird Morton, St. Bartholomew's Hospital; Hussein Nosrat, University College and St. Bartholomew's Hospital; Cyril Augustus Paulusz, Ceylon Medical College; Joseph Proujansky, London Hospital; Mary Colegrave Prideaux, London School of Medicine for Women; Beresford Tom Richards, Birmingham University; Leonard Ignatius Roberts, Madras and Middlesex Hospital; Harold Whillito Robinson, London Hospital; Frank Paul Schofield, St. Bartholomew's Hospital; Samuel Leon Szpigner, London Hospital; Joseph Gillison Tait, Edinburgh University; Edgar James Targett, Birmingham University; Harold Edwin Thomas, University College,; Leslie James Timings, Birmingham University; William Henry Turner, Guy's Hospital; Madeline Hilda Jane Umpleby, London School of Medicine for Women; Harold John Vane-Sutton, Middlesex Hospital; Abram Adolf Weinger, Paris and King's College; Effie Adela Wharton, London School of Medicine for Women; John Stanley White, St. Bartholomew's Hospital; Octavia Margaret Wilberforce, Royal Free Hospital; and Charles Florance Young, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ANNUAL MEETING OF FELLOWS AND MEMBERS.—A meeting of Fellows and Members will be held at the College on Thursday, Nov. 15th, at 3 o'clock P.M., when a report from the Council will be laid before the meeting. Fellows and Members can obtain copies of the report on application to the secretary, and can, if they so desire, have their names placed on the list of those to whom the report is sent annually. Motions to be brought forward at the meeting must be signed by the mover, or by the mover and other Fellows and Members, and must be received by the secretary, Mr. S. Forrest Cowell, not later than Nov. 6th. A printed copy of the agenda will be issued on or after Nov. 13th to any Fellow or Member who may apply for one.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

PRIMARY EXAMINATION, PART I.

Biology.—W. H. Shipway, Bristol, and R. S. Thomas, Cardiff.

Materia Medica and Pharmacy.—J. A. Marriott and J. Yates, Manchester.

PRIMARY EXAMINATION, PART II.

Anatomy.—M. L. Barst, London Hospital; G. M. Beaven, Royal Free Hospital; H. L. Bowen, Guy's Hospital; J. A. Cohen, King's College; C. R. Corfield, Manchester; A. H. G. Down, University College; M. A. K. El Hennawy, St. Mary's Hospital; G. E. W. Felce, Guy's Hospital; A. Furness and G. Furness, Manchester; W. E. K. Kirby, University College; J. Kershaw, Manchester; M. S. Mahmud, Liverpool; G. L. Meachim and E. G. Parkinson, Manchester; P. L. Richardson, Guy's Hospital; G. W. Robinson, King's College; E. Savage, Cardiff and St. Bartholomew's Hospital; H. E. Suter, St. Mary's Hospital; and A. Williams, Bristol.

Physiology.—M. L. Barst, London Hospital; G. M. Beaven, Royal Free Hospital; H. Brown, Liverpool; C. R. Corfield, Manchester; G. C. W. Curson, Guy's Hospital; D. J. Davies, Cardiff and St. Bartholomew's Hospital; A. H. G. Down, University College; G. E. W. Felce, Guy's Hospital; A. Furness and G. Furness, Manchester; J. A. Hart, London Hospital; M. A. R. Khalifa, Guy's Hospital; J. Kershaw and G. L. Meachim, Manchester; E. Savage, Cardiff and St. Bartholomew's Hospital; J. H. Sullaiman, Guy's Hospital; and H. E. Suter, St. Mary's Hospital.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Oct. 8th:—

Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.)—Maud Christine Cairney (with commendation), Basil William Henry Fergus, James Biggam Douglas Galbraith, Kenneth John Alexander Gillanders, William Mackintosh Kerr, Elizabeth Clark M'Haffie, John Macleod, Alice Julia Marshall, Margaret Mercedes Morton, Frederick Lubovius Richard, Andrew Riddell, Samuel Murdoch Riddick, Ian Menteith Robertson, Jessie Napier Robertson, John Alexander Stewart, Joseph Turner Taylor, William Halliday Wallace, and John Pendleton White.

Mr. Jules Steinmetz Martin, who graduated on July 21st, has gained the Brunton Memorial Prize of £10 awarded to the most distinguished graduate in medicine of the year.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.—At the meeting on Oct. 10th Sir Alfred Pearce Gould, who was in the chair, laid stress on the unique character of this fund, which is administered by civilian doctors to assist in the reinstatement of their civilian colleagues after the war. The policy of the fund was to collect and invest a large sum of money during the war, and to distribute the whole within a year or two of its conclusion.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded:—Scholarships in anatomy and physiology, £50 each: Florence J. Humphreys, George Baxter, and Helena J. Webster.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following Entrance Scholarships have been awarded:—Senior Science Scholarship for University students (£75): Richard Gainsborough, Magdalen College, Oxford. Junior Science Scholarship (£120): Alfred Talbot Rogers, Preliminary Science Class, Guy's Hospital. Scholarships in Arts (£50 each): George Russell Morgan Apsey, The King's School, Canterbury; and Charles Hugh Christie Toussaint, St. Bees School.

KING EDWARD VII. SANATORIUM.—On his appointment as medical adviser to the London Insurance Committee in respect to the administration of sanatorium benefit, Dr. Noel Dean Bardswell has resigned his post as superintendent at the King Edward VII. Sanatorium, Midhurst, which he has held since the foundation of the institution in 1906.

THE BRITISH HOSPITALS ASSOCIATION.—A conference will be held at Westminster Hospital on Friday, Oct. 19th, at 3.30 P.M., to consider the increase of grants for the medical treatment of soldiers and the proposed payment for discharged soldiers. The chair will be taken by Mr. Wade Deacon, chairman of the Royal Infirmary, Liverpool, and the Rev. G. B. Cronshaw, chairman of the Radcliffe Infirmary, Oxford, will open the discussion.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At the opening meeting of the session 1917–18, held at the West London Hospital on Oct. 5th, Dr. A. J. Rice-Oxley having been inducted to the presidency by the retiring President, Dr. E. A. Saunders, presented the latter with the Keetley memorial medal, and expressed the appreciation of the society for his work during the past session. Dr. Rice-Oxley then delivered an address on "The Medical Man as Portrayed in English Literature."

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual general meeting of this society will be held at No. 1, Upper Montague-street, Russell-square, London, W.C., on Friday, Oct. 19th, at 5 P.M. Dr. Charles Sanders will be inducted as President for the year 1917–18. After the formal business of receiving the reports of the officers Dr. Sanders will open a discussion on "The Prophylaxis of Venereal Diseases," when an important debate may be expected in view of the enormous public importance of the subject.

THE MAYORALTY OF BATH.—The new mayor of Bath will be Dr. Preston King, who occupied the chair as recently as 1913–14.

MUNICIPAL SANITATION AND TOWN-PLANNING.—Three public lectures, arranged in connexion with the Chadwick Departments of Municipal Engineering and Hygiene and the Department of Town Planning, will be held at University College, London, as follows: Thursday, Oct. 18th, at 5.30 P.M., "The Effect of the War on Municipal Engineering and Public Health," by Mr. H. Percy Boulnois, M.Inst.C.E. Chairman, Sir Maurice Fitzmaurice, C.M.G. Thursday, Nov. 1st, at 5.30 P.M., "Sanitary Work in the Army," by Major Arthur J. Martin. Chairman, the Hon. Sir John McCall, M.D., LL.D., Agent-General for Tasmania. Thursday, Nov. 15th, at 5.30 P.M., "Some General Aspects of Town-Planning after the War," by Professor S. D. Adshead, F.R.I.B.A. Application for tickets, accompanied by a stamped addressed envelope, should be sent to the Secretary, University College, Gower-street, London, W.C. 1.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.—The general annual meeting of these Funds will be held at the R.A.M.C. College, Grosvenor-road, London, S.W., on Friday, Oct. 26th, at 3 P.M. Sir Alfred Keogh, Director-General A.M.S., has consented to preside.

PRESENTATION TO A MEDICAL MAN.—Mr. Ephraim Frederick Hastings Burroughs, L.R.C.S. Irel., L.A.H. Dub., who has been surgeon to the Rational Friendly Society at Redland, Bristol, was presented with a purse of gold, as a mark of respect, on the occasion of his resigning the appointment after 25 years' service.

MEMORIAL TO THE LATE SIR GEORGE TURNER.—A memorial has been placed in Hoddesdon Church, Hertfordshire, bearing the following inscription:—

In grateful memory of Sir George Turner, Kt., M.B., for many years medical officer of this district and resident in this parish, afterwards medical officer of health for the Transvaal and member of the Legislative Council. By his discovery of a remedy for rinderpest he conferred a priceless and lasting benefit on the colony. For many years he made a study of leprosy with a view to its cure, and at last himself contracted the disease and sacrificed his life in the endeavour to save that of others. He died at Colyton, in Devon, March 12th, 1915, aged 67. This tablet was erected by a few friends in admiration of his devotion to duty and spirit of self-sacrifice.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

DOUBBLE, M. S., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Perranzabuloe District by the Truro (Cornwall) Board of Guardians.

EEDLE, E. J., L.R.C.P. Lond., M.R.C.S., Public Vaccinator for the Ashley District by the Bristol Board of Guardians.

JEROME, E. J., L.R.C.P., L.R.C.S. Edin., Medical Officer of Health for the Camelford (Cornwall) District Council.

KELLY, C., Medical Officer for the Bow, Colebrooke, and Coleridge Districts by the Crediton (Devon) Board of Guardians.

LAWRENCE, W. B., M.R.C.S., L.R.C.P. Lond., Tuberculosis Officer for Bournemouth.

PAULI, E. H. C., L.R.C.P. (Lond.), M.R.C.S., Public Vaccinator for the Knowle District by the Bristol Board of Guardians.

PIGGOTT, F. S. L., L.R.C.P. Lond., M.R.C.S., Medical Officer of Health for Teignmouth (Devon).

RUSSEL, A. J. H., Captain, I.M.S., Professor of Hygiene and Bacteriology, Medical College, and Resident Medical Officer, General Hospital, Madras, sub pro tem., with effect from July 2nd, 1917.

SIMONS, R. J. R. C., L.R.C.P. Lond., M.R.C.S. (Lieutenant-Colonel, R.A.M.C., T.F.), Medical Officer by the Chippenham (Wilts) Board of Guardians.

WHITWORTH, H. P., L.R.C.P. Lond., M.R.C.S., Medical Officer for the St. Agnes District by the Truro (Cornwall) Board of Guardians.

THE following have been appointed Certifying Surgeons under the Factory and Workshop Acts: ASHCROFT, J. A., M.D. Edin., for the Littleborough District of the county of Lancaster; BLOOMER, F. W., M.R.C.S., L.S.A., for the Long Eaton District of the county of Derby; BYRNE, E. C., L.R.C.P., L.R.C.S.I., for the Burton Latimer District of the county of Northampton; CROMPTON, K. E., M.B., B.C. Cantab., for the Wotton-under-Edge District of the county of Gloucester; and MUIR, J. F., M.D. Glasg., for the Whitehaven District of the county of Cumberland.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

BERMONDSEY TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £500 per annum.

BETHNAL GREEN, METROPOLITAN BOROUGH OF.—Female Assistant Medical Officer of Health. Salary £400 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £175 per annum, with board, &c.

BIRMINGHAM GENERAL HOSPITAL.—Resident Anæsthetist. Salary £150 per annum, with board, &c.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Resident Medical Officer and House Surgeon. Salary £200 and £150 per annum respectively each, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Senior House Surgeon. Salary £250 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—Fourth Year Student Dresser. Salary at rate of 52 guineas per annum, with board, &c.

CHESTER ROYAL INFIRMARY.—Honorary Radiographer.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Resident Surgical Officer.

EDINBURGH, CRAIG-LOCKHART POORHOUSE AND HOSPITAL.—Assistant Medical Officer. Salary £250 per annum, with board, &c.

EVELINA HOSPITAL FOR CHILDREN, Southwark, London, S.E.—House Physician and House Surgeon. Salary at rate of £160 per annum, with board, &c.

HOSPITAL FOR WOMEN, Soho-square, W.—Anæsthetist. Salary £1 1s. per attendance.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident House Physicians for six months. Salary at rate of £90 per annum each, with board, &c.

NETLEY, WELSH HOSPITAL.—Medical Officer.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, five House Surgeons, two Accident-room House Surgeons, House Surgeon to Aural and Ophthalmic Department, House Surgeon to Gynæcological Department, House Surgeon to Skin and Venereal Department, and House Surgeon to Out-patient Dressing Department.

OLDHAM ROYAL INFIRMARY.—Third House Surgeon. Salary £225 per annum, with board, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Senior House Surgeon. Salary at rate of 7 guineas per week, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN. Hackney-road, Bethnal Green, E.—House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c.

READING, ROYAL BERKSHIRE HOSPITAL.—House Surgeon for six months. Salary £250 per annum, with board, &c.

RICHMOND, SURREY, ROYAL HOSPITAL.—Refractionist. Salary £25 per annum.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident House Surgeon. Salary £100 per annum, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SHOREDITCH INFIRMARY AND WORKHOUSE.—Senior Assistant Medical Officer and Junior Assistant Medical Officer. Salaries £350 and £300 per annum respectively, with board, &c.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £200 per annum, with board, &c.

STOKE-ON-TRENT, COUNTY BOROUGH OF.—Female Assistant Medical Officer. Salary £350 per annum.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House Surgeon, unmarried. Salary £160 per annum, with board, &c.

WINCHESTER, HAMPSHIRE COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health. Salary £400 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Gunnislake, Cornwall, and at Muirkirk, Ayr.

Births, Marriages, and Deaths.

BIRTHS.

BELL.—On Oct. 6th, at Ravenscroft, Luton, the wife of Captain R. D. Bell, R.A.M.C., of a daughter.

BLAXLAND.—On Oct. 4th, at the Surrey street Nursing Home, Norwich, the wife of Jasper Blaxland (Captain, R.A.M.C. T.), of a son.

BRAMWELL.—On Sept. 27th, at Grosvenor-crescent, Edinburgh, the wife of Dr. Edwin Bramwell, of twin sons.

CADDY.—On Oct. 3rd, at Scarborough, the wife of Adrian Caddy, F.R.C.S., of a son.

CALDWELL.—On Oct. 6th, at Orcheston, Wilts, the wife of Captain J. R. Caldwell, R.A.M.C., of a daughter.

HANDS.—On Oct. 5th, at Glendalough, Totland Bay, I.W., the wife of C. H. Hands, M.B., B.Ch. Oxon., of a son.

NORMAN.—On Oct. 3rd, at Chigwell Hall, Chigwell (the residence of her parents), the wife of Captain N. F. Norman, R.A.M.C., of a daughter.

ORTON.—On Oct. 7th, at Gladwyn, Shoot-up-hill, Brondesbury, N.W., the wife of Lieutenant W. H. Orton, R.A.M.C., of a son.

PAIN.—On Oct. 4th, at a nursing home, Newcastle-on-Tyne, the wife of Dr. Arthur Pain, of Durham, of a daughter.

SHELDON.—On Oct. 7th, at Chepstow Villas, W., the wife of W. Sirr Sheldon, M.R.C.S., L.R.C.P., of a daughter.

SHERRIS.—On Sept. 24th, at Ripon Lodge, Denmark-hill, the wife of Captain Cyril Sherris, R.A.M.C., of a daughter.

MARRIAGES.

CRAIG—WALDRON.—On Oct. 3rd, at the Cathedral, Belfast, James A. Craig, F.R.C.S. Eng., University-square, Belfast, to Blanche, daughter of J. R. Waldron, The Red Cottage, Hythe, Hants.

GRAY—FERGUSON.—On Oct. 5th, at St. Mary Abbot's, Kensington, Adam Gray, M.D. Aberd., Captain, R.A.M.C., to Florence Joan, second daughter of R. Bruce Ferguson, M.A., M.D. Cantab., D.P.H., New Southgate.

LITHGOW—BALFOUR.—On Oct. 2nd, at the Parish Church, Tetbury, Major Ernest Lithgow, R.A.M.C. and R.F.C., to Doris, elder daughter of Lieutenant-Colonel A. M. Balfour, D.S.O., R.F.A., and Mrs. Balfour, of The Close, Tetbury.

DEATHS.

FIELD.—On Sept. 28th, died of wounds, Hassell D. Field, Captain, R.A.M.C.

MACKENZIE.—On Oct. 4th, killed in action, Henry Deedes Nutt Mackenzie, M.D., R.A.M.C., attached R.F.A., aged 48.

PETTINGER.—On Oct. 6th, at the Military Hospital, Aldershot, of pneumonia, James Wilson Pettinger, B.A., M.B. Cantab., Captain, R.A.M.C., aged 43.

WEBB.—On Sept. 29th, at The Haven, Cliff-road, Falmouth, Dr. Hy. Pelham Webb.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A DOUCHE LAVATORY ON A MAN-OF-WAR.

IN the *Archives de Médecine et Pharmacie Navales* for August Dr. Bellile, of the French Navy, gives an account of the arrangement of the douche lavatory on board the French man-of-war *Amiral Charner*. The old scheme in the French Navy was for the men to wash in buckets, one probably for each mess. (There was an old saying in another Navy about the mess-boy getting the first wash in winter and the last in summer, but those days are, of course, long past and gone.) In 1902 an order came out that washing in buckets was forbidden, and that douche-taps were to be fitted and supplied with warm water. The wash places were, however, not fitted, not even in the new ships. Individual ships had some advances. Thus a basin was served out to each man in the *Duguay-Trouin* and a few other ships. In 1909 again did the spirit of cleanliness stir at headquarters, and in 1911 Dr. Bellile got an installation fitted in the *Amiral Charner* which became the pioneer ship. The plant as described should be very effective. From a tank on the deck overhead, holding 2400 gallons, heated in winter by a coil of steam pipe, there are led two pipes to the compartment below, which can also be steam-heated in winter. The pipes are led in a U-bend round the room and a discharge with a rose is fitted every 2½ feet. The rose is made of copper so that it may not rust, and there are three holes (2 millimetres square) in the first, four in the second, and so on, to allow equal supply of water at each of the 35 roses. The douches, which are highly approved by the men, scarcely use any more water than the former buckets used and take up no more room. Moreover, it is much easier now for the sailors to keep clean.

DISCHARGE OF EFFLUENTS FROM FACTORIES INTO DURBAN BAY.

THE position arising from the discharge of liquid trade wastes into Durban Bay is considered in the report of the Natal Fisheries Department for 1916,[1] both as regards the effect on fish life and from a public health standpoint. This report relates the work of the department during the year under review, and gives full financial and statistical information (largely tabular) of the fishing industry in Natal; indeed, the whole report reflects the interest taken in developing and fostering this industry. Mr. Godfrey W. Dick, principal fisheries officer and secretary to the Natal Fisheries Board, says that a certain measure of success has attended the enactment of protective measures and their energetic enforcement by the inspector so far as conservation of fish life in Durban Bay is concerned, but he is constrained again to record the strong opinion that the pollution which takes place at the head of the bay has reduced the value of the work of the department very considerably. The position is engaging the serious attention of the Durban municipality, the Port Advisory Board, and Natal Fisheries Board.

In an annexure to the report headed "Clairmont Flats Nuisance," Mr. J. Fletcher, borough engineer, and Dr. P. Murison, medical officer of health, relate the source of the trouble and suggest remedies. The liquid trade wastes come from a chemical business and two sugar refineries near South Coast Junction, outside the borough of Durban. The considerable wastes from two of these concerns are conveyed by pipes and open channels and finally discharged on to a flat area of land about three-quarters of a mile from the head of Durban Bay. The third business conveys its wastes direct to the Umhlatuzan River. The trade wastes which are allowed to distribute themselves over the Clairmont Flats form in small depressions pools, and in larger ones ponds extending over acres. Recently one firm has made an effort to conduct the wastes into rectangular pits (over 150), thus limiting the area over which the wastes flow. The subsequent decomposition of this highly putrescible material is associated with the evolution of most objectionable gases and vapours, giving rise to discomfort and annoyance to the burgesses of Durban and having "in a considerable number acted injuriously on their health." This liquid trade waste is declared to be 40 times as strong as ordinary sewage. It is stated that no process of final disposal can be accepted which does not provide for special preliminary treatment, and that the question of final disposal through the sewerage system of the borough of Durban cannot be entertained. It is concluded that the special treatment of liquid trade refuse, combined with future treatment of the domestic sewage of this outside district, can be more effectually and economically dealt with by sewage works provided within the district, and by which it is feasible to obtain a non-putrescible effluent which could be safely discharged into the watercourses leading into the bay. In a later report Mr. Fletcher deals with tentative measures to abate the nuisance, as owing to the area being sparsely populated, the cost of

[1] Report of the Natal Fisheries Department, 1916: Coast Fisheries. Pietermaritzburg: P. Davis and Sons, Limited. 1917. Pp. 40. Price 1s. 6d.

a scheme, and the absence of an established local authority a combined and permanent scheme cannot at present be seriously considered; any scheme now proposed must deal only with liquid trade wastes. He first deals with permanent works for the safe disposal of *offensive* trade refuse and then refers to the method adopted by one firm of distributing its wastes over limited areas of land and afterwards cultivating the ground with good results. Although the land is waterlogged at a depth of 3 to 4 feet, he is of opinion that with an amply increased area of land, and the systematic workings and cultivation of the land over which the liquid wastes are disposed of, better results can be obtained. This is only suggested as a tentative measure, with a view to the immediate suppression of pollution. The trade wastes at present discharged into the river, the most serious source of pollution, should be diverted to the land for final treatment. The effluent from a factory within the borough is also considered; this effluent is different in character, smaller in quantity, and less offensive. The matter has later come under the consideration of the Natal Fisheries Board, and it was resolved that the Central Government should undertake the construction and equipment of a system of sewerage, without treatment, providing for an outflow of sewage into the sea, and that the Central Government should reimburse itself by means of a sewerage rate to be imposed on the users of the system. With the developments which may be expected in the district at the head of Durban Bay the question may become a large and complicated one, and it was held that any scheme undertaken should provide for the future requirements of the district.

From the above account it will be seen that a position of some difficulty has arisen in regard to fish conservation, public health, and social amenities, and it is to be hoped that a satisfactory settlement will be reached.

WEIHAIWEI.

J. H. Stewart Lockhart, K.C.M.G., Commissioner of Weihaiwei—the territory leased to Great Britain by China in 1898—in his report, recently received at the Colonial Office for the year 1916, states that the inhabitants (197,177) were as well-behaved and industrious as usual and their health excellent. In the hospital at Port Edward there were 7799 out-patients and 192 in-patients, and the number of operations performed was 329. At Wenchuan'tang Hospital 3332 new cases were seen. In the hospital on the Island of Liu Kung there were 2596 out-patients and 22 in-patients; the total attendances were 6625, and 86 operations were performed. During the year 5339 persons were vaccinated.

The number of opium-smokers certified by the Government medical officers to be persons whose life or health would be endangered by a sudden cessation of the use of opium was 36, as compared with 38 in 1915, the average age of the licencees being 60. The number of convictions under the Ordinance prohibiting the importation and smoking of opium was 63, as compared with 59 in 1915. The highest temperature was 96° F. in June and the lowest 12° in December. Rain or snow fell on 69 days. The average rainfall in 16 years up to the end of 1916 was 29·43 inches, the highest fall being 47·70 inches in 1914 and the lowest 15·76 inches in 1900.

H. asks: Has any medical man seen or heard of harm resulting from the continuous administration of 0·5 gramme of dirin twice or thrice daily over a period of three months or more?

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Oct. 17th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Exhibition of Books, Pictures, &c. (at 4.30 P.M.).

Papers:

William Osler: Note on Boerhaave's Position as a Scientific Observer.

M. E. C. Van Leersum (Amsterdam): Two of Boerhaave's Lecture Lists.

Henry Barnes: On Consultations with Boerhaave (Extracts from the Note-book of a Carlisle Physician).

Lieut.-Col. D'Arcy Power: Boerhaave's Letters to Cox Macro.

Thursday, Oct. 18th.

PATHOLOGY (Hon. Secretaries—J. E. H. McDonagh, H. MacCormac; Hon. Secretary—S. E. Dore): at 5 P.M.

(at 4.30 P.M.).

Friday, Oct. 19th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, Wilcox): at 8.30 P.M.

Address:

By the President, Dr. Harrison Orton.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C. 2.

TUESDAY.—4.15 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. 4.30 P.M., Opening Address:—Dr. L. Williams: The Real Dermatology. 5 P.M., Exhibition of Clinical Cases.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W. 1.

WEDNESDAY.—8 P.M., Papers:—Mr. H. Sidebottom: Report on the Recent Foraminifera dredged off the East Coast of Australia by W. B. Thornhill, H.M.S. *Dart* Station 19 (May 14th, 1895). Lat. 29° 22′ S., Long. 153° 57′ E., 465 fathoms.—Mr. F. M. Duncan: On Mounting and Preserving Marine Biological Specimens.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Presidential Address:—Sir David Bruce, C.B.: Tetanus—Analysis of 1000 Cases. Followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. J. L. Bunch: Salvarsan and Syphilis.

WEDNESDAY.—5 P.M., Capt. W. Griffith, R.A.M.C.: Skin Disease in the Army.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Baldness and its Treatment.

METEOROLOGICAL READINGS.

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office, Oct. 10th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 4	...	61	61	58	60	61	Raining
,, 5	0·29	87	54	45	45	48	Fine
,, 6	0·12	84	52	43	42	43	Overcast
,, 7	...	85	59	37	39	41	Raining
,, 8	0·17	75	57	41	45	48	Fine
,, 9	0·21	82	55	48	47	50	Fine
,, 10	0·01	80	51	40	41	42	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Journal of the Missouri State Medical Association, British Journal of Inebriety, Edinburgh Medical Journal, Journal of Laryngology, Rhinology, and Otology, Medical Review, Canadian Practitioner and Review, Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, Dominion Medical Monthly, British Journal of Dental Science, Archives of Pediatrics, &c.

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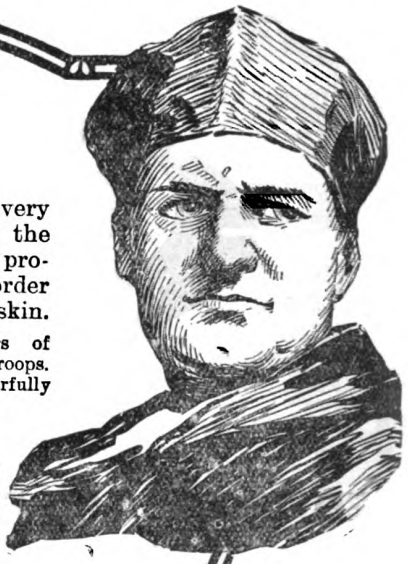
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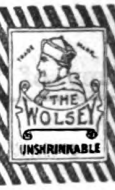
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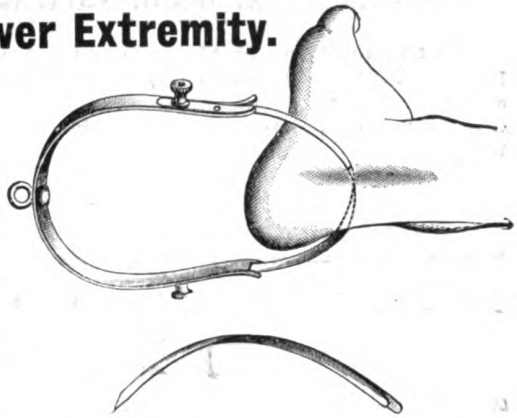
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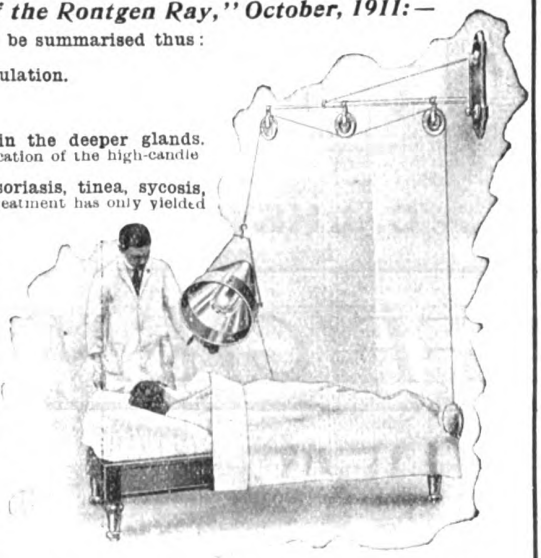
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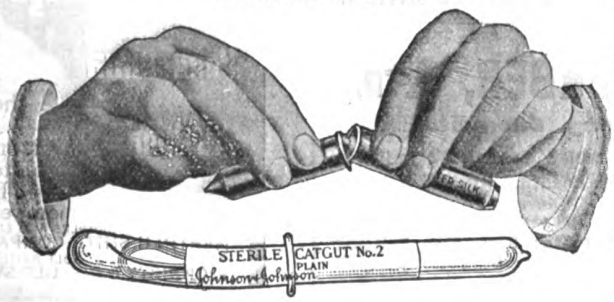
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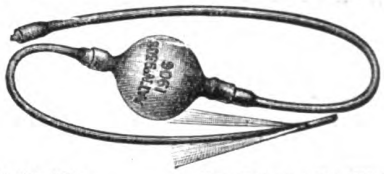
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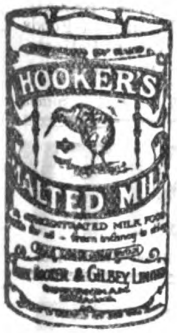


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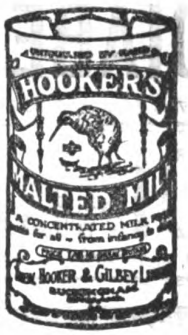
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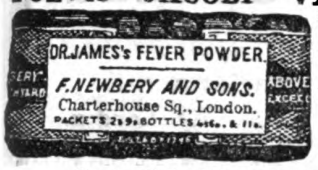
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Resident Physician—BERTHA MULES, M.D.

Terms on application. *Telephone: Starcross 19.*

LONDON FEVER HOSPITAL.

LIVERPOOL ROAD, ISLINGTON, N.

FOR THE TREATMENT OF NON-PAUPER PATIENTS SUFFERING FROM INFECTIOUS FEVERS.

Part of the cost is paid by the patient, the balance being found by the Hospital. There are a few private rooms, at 5½ guineas a week, payable weekly in advance. No aid is received from the rates. Subscribers' domestic servants removed at small cost and treated free of charge.

For admission apply to the Secretary. W. CHRISTIE, Major.

MALLING PLACE, KENT.

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent.

Telegrams: ADAM, WEST MALLING.
Telephone: No. 2 MALLING

HEIGHAM HALL, NORWICH.

Telephone ***For Upper & Middle Classes*** 80 Norwich.

A Private Hospital for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with Special Attendants available. **Boarders** taken without certificates. **French Chef. Terms from 2 to 20 guineas weekly. Patients sent for.**

J. G. GORDON MUNN, M.D., F.R.S.E., Proprietor and Res. Phys.

STRETTON HOUSE,

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church Stretton.

CHEADLE ROYAL.

A HOSPITAL FOR MENTAL DISEASES,

CHEADLE, CHESHIRE.

AND ITS SEASIDE BRANCH,

GLAN-Y-DON, COLWYN BAY,

NORTH WALES.

The object of the above is to provide the most efficient means for the cure of mental diseases in those who belong to the upper and middle classes.

Voluntary boarders as well as certified patients are received for treatment.

For terms and further information apply to the Medical Superintendent, W. SCOWCROFT, M.R.C.S., &c., at Cheadle, or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from 2 to 3.

Telephone: 203 "Cheadle Hulme," 3594 "Manchester."

NEW SAUGHTON HALL

PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL CASES

POLTON, MIDLOTHIAN.

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres. There is also a SEASIDE HOUSE at GULLANE, EAST LOTHIAN.

Railway Stations—Polton, five minutes; and Loanhead, ten minutes' walk from the Institution—reached in half-an-hour from the Waverley Station, Edinburgh. Telephone—4 Loanhead.

Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, J. BATTY TUKE, M D. Inclusive terms from £84 to £400 per annum, according to requirements.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.

Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.

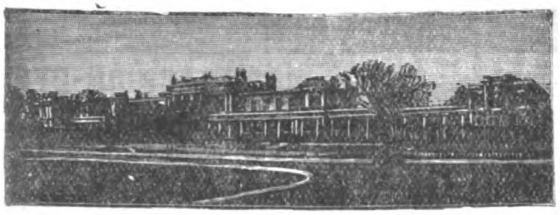
MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. E. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.

Other days by appointment.

Visiting and Consulting Physicians { Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." **Telephone: New Cross 1067.**

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.

Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

NORTHUMBERLAND HOUSE,

Telegrams: "SUBSIDIARY, LONDON."

GREEN LANES, FINSBURY PARK, N.

(Established 1814.)

Telephone: No. 888, North.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." **Telephone: New Cross 576.**

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES.

(Formerly the EARLSWOOD ASYLUM.)

REDHILL, SURREY.

E. C. P. HULL, Esq., J.P., Treasurer.

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION, and needing SPECIAL TRAINING in useful occupations. **SCHOOLS, FARMING,** and various **TRADE WORKSHOPS.**

SELECTED CASES admitted on reduced inclusive fees. **THOSE UNABLE TO PAY** admitted by votes of Subscribers, with part-payment towards cost.

RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

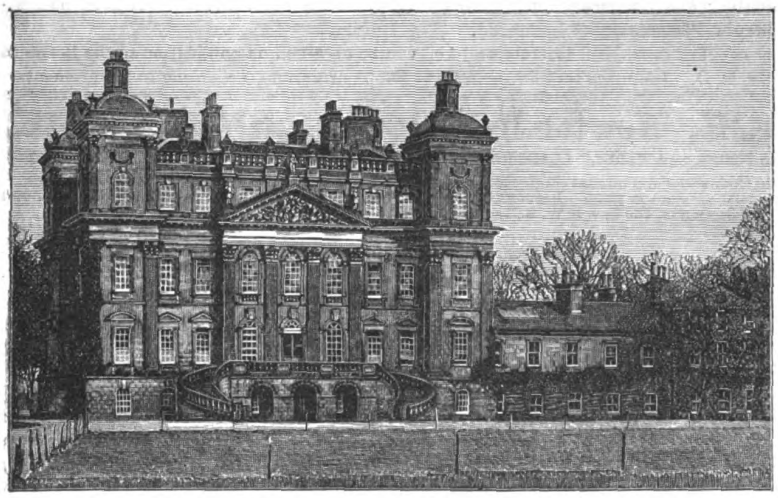
Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14–16, Ludgate Hill, E.C. 4.

Telephone: Redhill 344. Telephone: City 5297.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales



DUFF HOUSE, BANFF SCOTLAND.

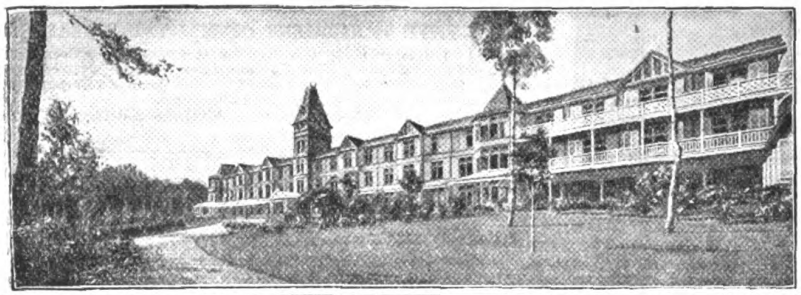
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON, Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

MATLOCK SANATORIUM

Situated over 700 feet above sea-level. The climate is dry and bracing, and the buildings and grounds are specially suitable for **PULMONARY CASES.**

A new X-ray apparatus has been installed, and all the most modern forms of treatment are available in suitable cases.

For particulars apply to F. KINCAID ETLINGER, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire.

Telegrams: SANATORIUM, MATLOCK. Telephone: MATLOCK 22.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

HOMES FOR INEBRIATE WOMEN.

ELLISON LODGE, Herne Hill, S.E.

HAMOND LODGE, Terrington St. Clement, King's Lynn, [Norfolk.

TEMPLE LODGE, Torquay.

Terms: Drawing-Room, £2 2s., £1 1s.; Work-Room, 15s., 12s. 6d., 10s; Kitchen, 7s. 6d. weekly.

REV. GERALD A. THOMPSON, Secretary Church of England Temperance Society, 50, Marsham-street, Westminster, S.W.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat Telephone: 769.

GHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the war.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H HOLLYER, 43, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

HEALTH RESORT for

TUBERCULOSIS

OPEN ALL THE YEAR.

In 1916: 16,694 Visitors, with 857,509 Days of Residence.

DAVOS

CANTON OF THE GRISONS, SWITZERLAND.

5200 feet above sea-level.

Best results in the treatment of chronic catarrhal and infiltrative Affections of the Lungs, chronic bronchial catarrh, pleurisy with residual exudate, asthma nervosum, scrofula, chlorosis, neurasthenia, malaria, Graves' Disease, convalescence.

Principal Railway Stations: DAVOS-PLATZ & DAVOS-DORF.

Further information, Guide, &c., *gratis* and *post free* from the **DAVOS PUBLIC INTERESTS ASSOCIATION, DAVOS-PLATZ,** or THE OFFICIAL AGENCY OF THE SWISS FEDERAL RAILWAYS, 11B, Regent Street, Waterloo Place London, S.W.

BIARRITZ (France).

Establishment for the Treatment of CHRONIC DISORDERS

(Colitis, Entero-colitis, Skin Diseases, &c.)

by the method of the late Professor Elie Metchnikoff, of Paris, modified

For further information write to—

M. LE DOCTEUR, CHALET LA ROCHEFOUCAULD, BIARRITZ.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

Borough Hospital, Birkenhead.—Wanted, JUNIOR HOUSE SURGEON. Must be fully qualified. Salary £175, board, and laundry. Duties include casualties and anæsthetics.—Applications, with testimonials, to be sent to the Secretary.

Bermondsey Tuberculosis Dispensary.—Wanted, MEDICAL OFFICER, with previous Tuberculosis experience. Whole-time post. Salary £500 Apply, with copies of testimonials, to the Hon. Sec., 108, Grange-road, S.E. 1.

The Prince of Wales's General Hospital, Tottenham, N. 15. — Applications are invited for the post of SENIOR HOUSE SURGEON at the above Hospital.

Salary at the rate of 7 guineas per week, with residence, board, and laundry.

Candidates must possess the double qualification, and applications, with copies of three testimonials, to be sent to me on or before Monday, 15th October.

2nd October, 1917. FREDERICK W. DREWETT, Director.

Walsall and District Hospital.—The Committee invite applications from ladies for the post of ASSISTANT HOUSE SURGEON and ANÆSTHETIST, which will shortly become vacant. Salary £175 per annum, with board, residence, and laundry.

Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, to the undersigned.

WALTER FRANCOMBE, Secretary.

Salisbury General Infirmary (200 beds).—Wanted, a HOUSE SURGEON, Male or Female. Salary £150 per annum, with apartments, board, lodging, and washing.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

All applications, with testimonials, to be sent to the undersigned, of whom the rules relative to the duties may be had on application.

The duties may commence from the date of the appointment.

Dated 17th Sept., 1917. S. B. SMITH, Secretary.

Bolingbroke Hospital (Incorporated), Wandsworth Common, S.W.—RESIDENT MEDICAL OFFICER and HOUSE SURGEON required, Male or Female. Appointments for six months or one year. Opportunities for experience in Operative Surgery. Salary of former £200 per annum, with board-residence and laundry, and of latter £150 per annum, with board-residence and laundry.

Applications, with not less than three testimonials, to be sent in not later than Monday, 15th inst., to the Secretary, Bolingbroke Hospital, Wandsworth Common, S.W. 11.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. 2. — Resident Medical Posts will fall vacant as follows:—

HOUSE PHYSICIAN, 17th January.
CASUALTY HOUSE SURGEON, 1st January.
HOUSE SURGEON, 1st January.

Six months' appointments. Salary £100 per annum, with board, residence, and washing.

Candidates should be doubly qualified, but applications from Fifth year Students will be entertained. T. GLENTON-KERR Secretary.

1st Oct., 1917. Telephone: Dalston 305.

West Bromwich District Hospital (105 beds).—Wanted, a SENIOR HOUSE SURGEON.

Salary £160 per annum, with board, residence, and washing.

Candidates must be unmarried, doubly qualified, and duly registered.

Applications, stating age, qualifications, with copies of testimonials, to be sent to the Honorary Secretary, T. FOLEY BACHE, Esq., J.P., Lombard House, West Bromwich.

Canvassing the members of the Board will be deemed a disqualification. By order of the Board.

FRANK I. HANCOCK, Secretary.

District Hospital, West Bromwich, Sept. 11th, 1917.

The Royal Infirmary, Sheffield (363 beds). — Wanted, a HOUSE PHYSICIAN. Salary £120 per annum with board and residence. The duties of the Officer to be elected will include work in the In- and Out-Patient Departments under the supervision of the Honorary Medical Staff.

The post is an important one.

Applications, which are invited from persons who must be fully qualified, should be sent immediately, stating age, qualifications, and any previous experience. By order.

Board Room. JNO. W. BARNES, Secretary

County Borough of Stoke-on-Trent.—ASSISTANT LADY MEDICAL OFFICER. — Applications are invited for the position of Assistant Lady Medical Officer in connexion with the Maternity and Child Welfare Work, &c., in the Borough.

Salary £350 per annum. Particulars as to the duties and the conditions of the appointment may be obtained on application to the Medical Officer of Health, St. Peter's Chambers, Glebe-street, Stoke-on-Trent. Applications, endorsed "Assistant Lady Medical Officer" and accompanied by copies of two recent testimonials, to be delivered to me not later than 12 noon on Saturday, 20th October, 1917.

E. B. SHARPLEY, Town Clerk.

Town Hall, Stoke-on-Trent, 3rd October, 1917.

Hampshire County Council. ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH — The Hampshire County Council propose to appoint a Temporary Assistant County Medical Officer of Health for the period of the War and invite applications from fully-qualified Medical Men or Women. Possession of a Diploma or Degree in Public Health will be considered an advantage. Salary £400, in addition to travelling allowances.

Applications, with copies of not more than three testimonials, upon a form which, with the conditions of appointment, may be obtained from the undersigned, must be delivered at The Castle, Winchester, on or before Monday the 22nd October, 1917.

The canvassing of members of the County Council or any committee personally or otherwise, is strictly prohibited and will disqualify.

H. BARBER, Clerk of the County Council.

The Castle, Winchester, 3rd October, 1917.

Royal Cornwall Infirmary, Truro (90 beds, including accommodation for Wounded Soldiers.—HOUSE SURGEON wanted. Salary £150, rooms, board, and washing. Apply, with copies of three recent testimonials, to Secretary, of whom further particulars may be obtained.

Chester Royal Infirmary.—The Board of Management invite applications for the position of HONORARY RADIOGRAPHER, from a duly qualified and registered medical gentleman, to take charge of the X-Ray Department.

Applications should be addressed to the Chairman, Secretary's Office, Royal Infirmary, Chester.

Oldham Royal Infirmary (200 beds, 75 military). — Wanted, THIRD HOUSE SURGEON Male (ineligible); duties to commence Oct. 23rd. Salary £225 per annum, with board, residence, and laundry. Applications with testimonials to be sent to the undersigned.

EDWIN LIONEL BEAKE, Supt. and Secty.

The General Hospital, Birmingham. —Applications are invited for the post of Second Qualified RESIDENT ANÆSTHETIST (Man or Woman).

Salary £150, with board, apartments, and washing.

Applications, giving full particulars of qualifications and experience and accompanied by two recent testimonials, should be sent to the undersigned by October 23rd.

October 5th, 1917. A. H. LEANEY, House Governor.

Liverpool Infirmary for Children.—There are vacancies for Two RESIDENT HOUSE PHYSICIANS, Gentlemen (ineligible for Military Service) or Ladies.

The appointments will be for a period of six months. Salary in each case at the rate of £90 per annum, with board and lodging.

Applications, with recent testimonials (copies), to be sent to the Hon. Secretary, Children's Infirmary, Myrtle-street, Liverpool.

Derbyshire Royal Infirmary, Derby (367 beds, 170 Military).—RESIDENT SURGICAL OFFICER required. It is essential that he should be a competent surgeon and ineligible for Military Service. It is desirable that he should have knowledge of Ophthalmic, Ear, Throat and Nose, and X-Ray work. A liberal salary will be paid to a suitable applicant. Application, with copies of three testimonials, to be received by 20th October.

EDMUND FORSTER, Superintendent.

RESIDENT HOUSE SURGEON.

Applications are invited for the post of Resident House Surgeon.

Candidates should be doubly qualified and registered.

Applications should be accompanied by copies of not less than three recent testimonials.

Salary £100, with board, lodging, and washing.

Address, the Secretary,

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL,
234, Great Portland-street, W. 1.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Metropolitan Borough of Bethnal GREEN. — LADY ASSISTANT MEDICAL OFFICER OF HEALTH.—The Council invite applications for the appointment of a Lady Medical Practitioner as Assistant Medical Officer of Health (whole-time) primarily for the purposes of a Maternity and Child Welfare Scheme, at a salary of £400 per annum.

Candidates must be registered Medical Practitioners. Preference will be given to those holding a Public Health Diploma, but this qualification is no essential.

The appointment will be temporary, terminable at three months' notice on either side.

Candidates must have had special experience in connexion with Maternity and Child Welfare work.

Applications, on forms which contain further particulars to be obtained from the Medical Officer of Health, Town Hall, Bethnal Green, E. 2, accompanied by copies of not more than three recent testimonials one at least bearing upon the candidate's experience in Maternity and Child Welfare work and organising ability, must reach me not later than noon on Wednesday the 17th day of October, 1917, endorsed "Assistant M.O.H."

Canvassing, direct or indirect, will disqualify a candidate.

Town Hall, Bethnal Green, E. 2. DAVID J. KEEP, Town Clerk.

Bolton Infirmary and Dispensary

(166 beds, mostly Surgical, including Wounded Soldiers).—Applications for the appointment of SENIOR HOUSE SURGEON are invited from Ladies having a registered Medical and Surgical qualification. Salary £250 per annum, with apartments, board, and attendance.

Applications, stating age, with copy of testimonials, should be forwarded to the undersigned, from whom further particulars may be obtained.

A. BRISCOE, Secretary.

Edinburgh Parish Council.—Assistant

MEDICAL OFFICER (qualified Resident) wanted for CRAIGLOCKHART POORHOUSE and HOSPITAL, Edinburgh, to enter on duty 31st December next. Salary £250 per annum, with board and apartments. The appointment is open to Male and Female candidates.

Applications, stating age, &c., with copies of testimonials, to be lodged with the Subscriber on or before Monday, 29th October curt.

R. T. FRENCH, Inspector and Clerk to Council.

Parish Council Chambers, Castle-terrace, Edinburgh.
6th October, 1917.

Wolverhampton & Midland Counties

EYE INFIRMARY.—HOUSE SURGEON wanted at once, preferably with a knowledge of Refraction. Candidates must be ineligible for Military Service. There are 56 beds for In-patients (20 of which are reserved for Military Cases) and a large Out-patient Department.

Salary £150, with furnished apartments, board, and laundry.

Applications, with copies of three recent testimonials, should reach me by the 24th October inst.

ARTHUR M. MANBY, Secretary (pro tem).

The Eye Infirmary, Wolverhampton, 9th October, 1917.

Royal Salop Infirmary, Shrewsbury.

—HOUSE PHYSICIAN wanted, to take up the duties at the beginning of November. Candidates must be registered under the Medical Acts.

Applications, with recent testimonials (not less than three), to be sent to the undersigned forthwith.

Salary at the rate of £200 per annum, with board and apartments.

The duties consist of being responsible to the Medical Staff for the Medical cases, to assist the Pathologist, and to act as Anæsthetist.

The House Physician is the Junior Resident Officer.

Applications from married men will be considered

6th October, 1917. ALFRED SUGDEN, Secretary.

Evelina Hospital for Children, Southwark, London, S.E.

—The Committee of Management require a HOUSE PHYSICIAN and a HOUSE SURGEON from 1st November to 12th March, 1918.

Salary at rate of £160 per annum, with board, residence, and washing. Candidates (either sex) should send applications before 25th instant, with three testimonials (copies only), to the Secretary at the Hospital.

Applicants (qualified and registered) must be interviewed by the Medical Committee. Selected candidates have to appear before the Committee of Management. Time and place of meeting will be notified by the undersigned, from whom rules and other particulars relating to the post *must* be obtained.

By order of the Committee of Management.

8th October, 1917. H. C. STANILAND SMITH, Secretary.

Royal Victoria Infirmary, Newcastle-upon-Tyne.

RESIDENT APPOINTMENTS.

The following Resident Appointments will become vacant on Thursday, 1st November, 1917:—

Four HOUSE PHYSICIANS.
Five HOUSE SURGEONS.
Two Accident Room HOUSE SURGEONS.
One HOUSE SURGEON to the Aural and Ophthalmic Department.
One HOUSE SURGEON to the Gynæcological Department.
One HOUSE SURGEON to the Skin and Venereal Department.
One HOUSE SURGEON to the Out-patient Dressing Department.

Candidates for the appointments may be either Male or Female, and, in the former case, must be ineligible for Military Service.

Applications should be sent to me not later than Saturday, 20th October, 1917.

6th October, 1917. D. WELLS PATTERSON, M.B., M.R.C.P., Dean.

Parish of Saint Leonard, Shoreditch.

ASSISTANT MEDICAL OFFICERS.

The Guardians of the Poor of the above-named Parish require:—

(1) A Senior Assistant Medical Officer,
(2) A Junior Assistant Medical Officer,

for their Infirmary and Workhouse adjoining. Salary £350 and £300 per annum respectively, with board, furnished apartments, and washing (subject to deductions under the Poor-law Officers' Superannuation Act, 1896).

Candidates must be fully qualified as required by the Regulations of the Local Government Board, and the gentlemen appointed will reside in the Infirmary and must devote the whole of their time to the duties of their respective offices. The appointments will be made subject to the sanction of the Local Government Board.

Applications, upon forms to be obtained at my office as under, must be forwarded to me not later than Monday, the 15th instant.

By order

ROBERT CLAY, Clerk to the Guardians.

213, Kingsland-road, E. 2, 3rd October, 1917.

The Hospital for Women, Soho-square, W.

—ANÆSTHETIST required at once for occasional duty. Fee £1 1s. per attendance.

A. HAYWARD, Secretary.

Welsh Hospital, Netley.—The Committee invites applications for the following vacancy at the Welsh Hospital, Netley:—MEDICAL OFFICER for general duties and capable of undertaking any kind of surgical work.

Terms and conditions of appointment, with forms of application, may be had from the Hon. Secretaries, Welsh Hospital, 82, Queen-street, Cardiff.

Royal Berkshire Hospital (260 beds, 156 Military).

—Wanted, HOUSE SURGEON. Salary £250 per annum, with board, lodging, and washing. The appointment is for six months. Candidates must be duly qualified and on the Medical Register. Applications, with copies of three testimonials, should be addressed to the undersigned, of whom any further information may be obtained.

Reading, 13th October, 1917. HERMAN BURNEY, Secretary.

District Infirmary and Children's HOSPITAL, Ashton-under-Lyne

(General Hospital of 175 beds, 30 of which are used for Wounded Soldiers and Sailors).—HOUSE SURGEON. The post of House Surgeon will become vacant at the end of the year. Applications from duly qualified Ladies or Gentlemen will now be received. Salary £250 per annum, plus fees, and board, residence, and washing.

FRANK OLIVER,
General Superintendent & Secretary.

Royal Hospital, Richmond, Surrey.—

Wanted, a qualified REFRACTIONIST, Male or Female, to attend on Wednesday afternoons at 2.30. Honorarium £25 per annum. Apply, The Secretary.

King Edward VII.'s Hospital, Cardiff

(Cardiff Infirmary). General Hospital, 320 beds, 104 of which are occupied by Wounded Soldiers.—There is a vacancy for a FOURTH YEAR STUDENT DRESSER. Excellent opportunity for clinical work and for administration of Anæsthetics. Would suit a reading man. The appointment will be for three months subject to renewal.

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October 8th, 1917. LEONARD D REA, Secretary & Gen. Supt.

Matron Assistant wanted for Gartloch

MENTAL HOSPITAL, Gartcosh, near Glasgow. Preference will be given to applicants having mental training as well as general training. Salary commences at £45 per annum plus war bonus £11 5s., with board, lodging, laundry, and uniform.

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Private Nurse wanted, willing to travel. Cheerful disposition.—Address, stating salary, to No. 515, THE LANCET Office, 423, Strand, W.C. 2.

Secretary-Attendant. — Lady (29), well recommended, desires post. Tall, active, accustomed telephone, &c.—Write, R., 7, Dorset-square, N.W. 1.

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Partner wanted in a good-class very old-established General Country Practice in West County. Income over £1800 a year. Poor Law, Panel, and other appointments. Mainly agricultural and rising district. Plenty of scope for increase. Good educational facilities. An excellent opportunity for a young and energetic man (ineligible).—Further particulars, apply No. 6193, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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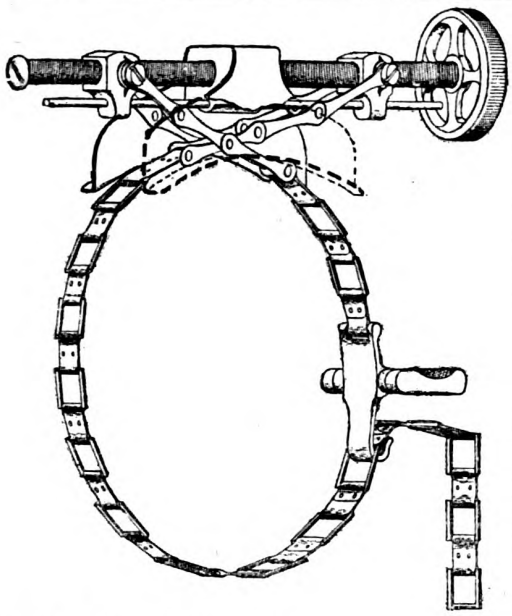
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THE LANCET.

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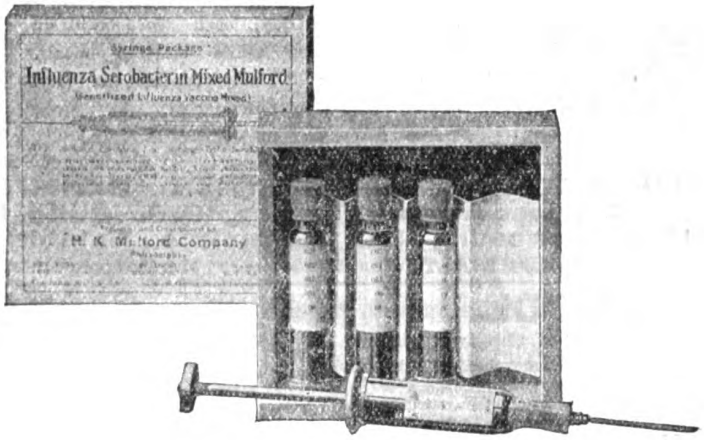
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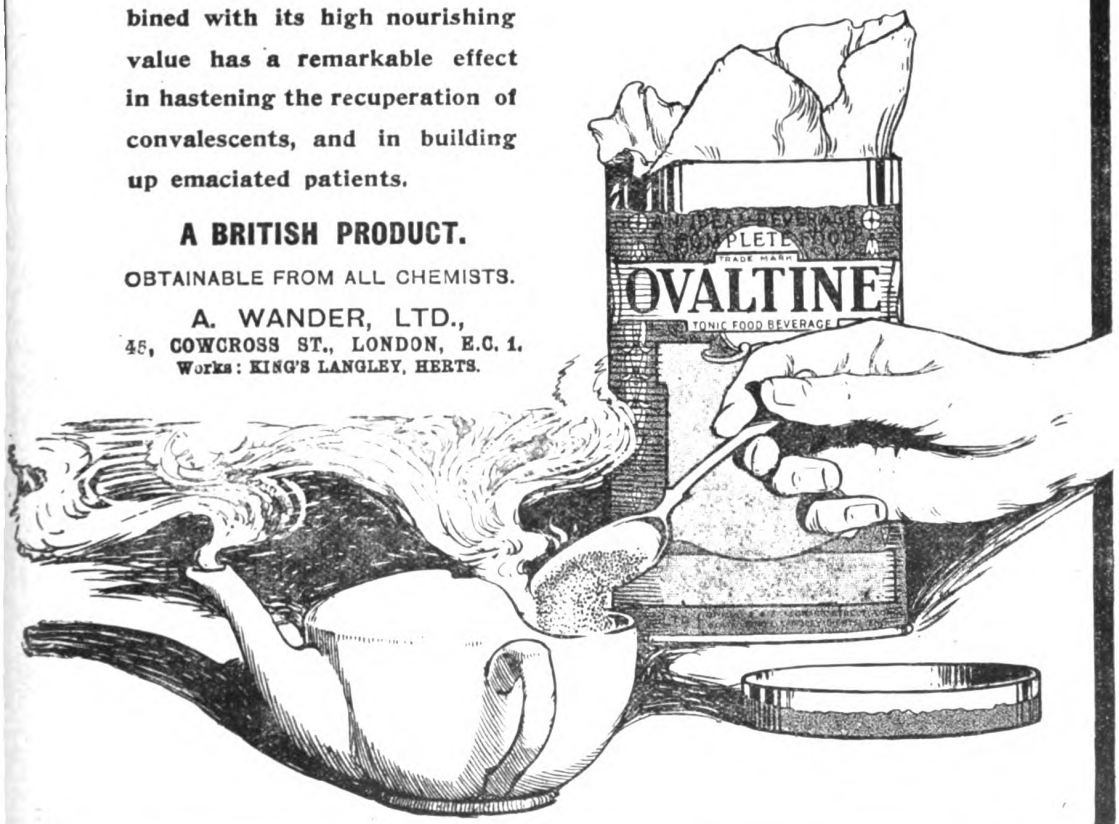
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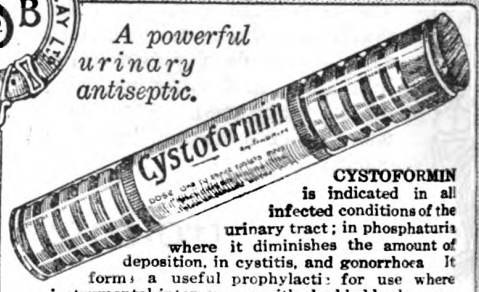
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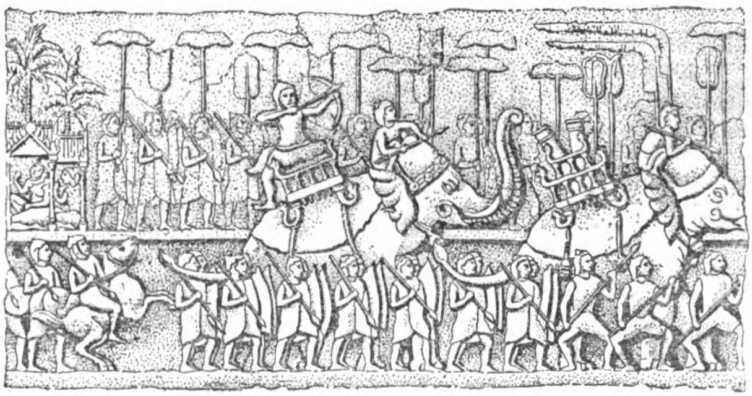
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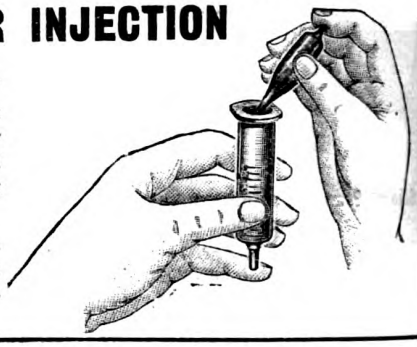
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AMBRINE instantly alleviates pain, promotes rapid healing, forms a sure Protection against Infection of the Wound.

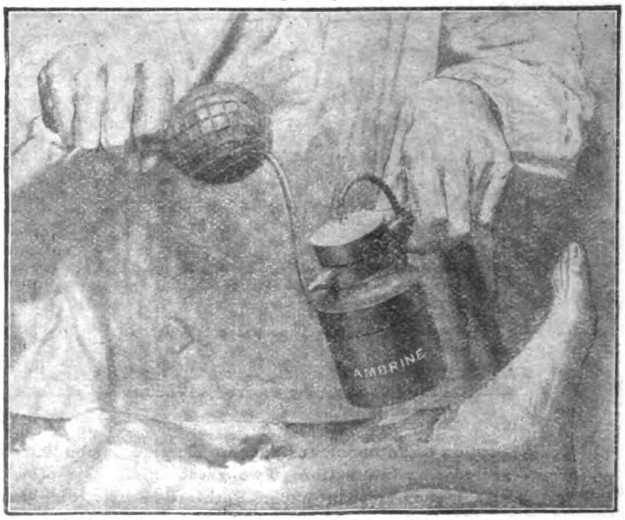
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The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

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THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

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The Relations OF TUBERCULOSIS TO WAR CONDITIONS.

WITH REMARKS ON SOME ASPECTS OF THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.[1]

By ARTHUR NEWSHOLME, K.C.B., M.D.,
MEDICAL OFFICER TO THE LOCAL GOVERNMENT BOARD.

THE disturbed distribution of population caused by the war renders it impracticable to give accurate local death-rates for tuberculosis in either sex or for tuberculosis in men for the whole country. Apart from such rates, the figures as to total deaths from pulmonary tuberculosis in England and Wales in recent years are, however, instructive. The table below shows that, comparing the experience of 1913, the last complete year before the war, with subsequent years, the deaths from pulmonary tuberculosis increased by 1582 in the year 1914, by 4621 in 1915, and by 4490 in 1916, the third year of war.

The increase was not confined to one sex. Comparing recent years once more with 1913, male deaths from pulmonary tuberculosis increased by 778 and female deaths by 804 in the first year of war; male deaths by 2596 and female deaths by 2025 in the second year of war; and male deaths by 2204 and female deaths by 2286 in the third year of war.

England and Wales.

Year.	Deaths from pulmonary tuberculosis.			Deaths from other forms of tuberculosis.			Deaths of persons from—		
	Males.	Females.	Total.	Males.	Females.	Total.	Pneumonia.	Bronchitis.	Influenza.
1911 ...	21,985	17,247	39,232	7,242	6,646	13,888	37,642	36,555	4,343
1912 ...	21,568	16,515	38,083	6,238	5,730	11,968	37,348	39,733	5,354
1913 ...	21,034	16,021	37,055	6,623	5,798	12,421	37,530	39,227	6,394
1914 ...	21,812	16,825	38,637	6,264	5,397	11,661	40,070	40,189	5,964
1915 ...	23,630	18,046	41,676	6,715	5,904	12,619	48,874	50,974	10,484
1916 ...	23,238	18,307	41,545	6,488	5,825	12,313	37,916	43,412	8,791

The increased mortality from pulmonary tuberculosis having been shared by both sexes, it must be inferred that conditions arose adversely affecting the health of persons of both sexes in these years.

It is natural to assume that the altered conditions of life during war-time were concerned in producing this effect; but this hypothesis needs to be considered in relation to collateral experience of other diseases, as shown in the above table.

The teaching of this table is brought out in the following table, in which the experience of deaths in 1913, under each disease, is stated by the relative figure 100.

England and Wales: Relative Mortality in 1913 (= 100) and in Subsequent Years from Certain Diseases.

Year.	Pulmonary tuberculosis.	Influenza.	Pneumonia.	Bronchitis.
1913 ...	100	100	100	100
1914 ...	104	93	107	103
1915 ...	112	164	130	130
1916 ...	112	138	101	111

It will be seen that increased mortality from pulmonary tuberculosis was associated in 1915 and 1916 with still more excessive mortality from influenza. This association is no new feature. It was seen markedly in the years 1890-91-92, and again in 1899-1900. The experience of 1915-16 is the third occurrence in recent years of this coincidence; and there can be no doubt that influenza is a most dangerous complication of pulmonary tuberculosis.

It is noteworthy that the deaths from pulmonary tuberculosis in both 1915 and 1916 were 12 per cent. in excess of those in 1913, but that in 1916 the deaths from pneumonia had ceased to occur in excessive numbers, while an excess in deaths from influenza and from bronchitis continued on a smaller scale than in 1915. Whether this justifies the conclusion that the influenza element in the causation of excessive mortality from pulmonary tuberculosis was shared in 1916 by special war conditions to a greater extent than in 1915 cannot be stated with certainty. Probably both in 1915 and 1916 war conditions have borne an important part in the excessive mortality from all the diseases enumerated in the above table. There has been inter-communication between different localities on a much larger scale than in normal times, and catarrhal infections—including cerebro-spinal fever, as well as the above-mentioned diseases—have been rife.

It has been noted that the excessive mortality from pulmonary tuberculosis has affected both sexes. In both sexes the conditions favouring this excess, apart from catarrhal infections, have probably been similar.

Men in the Army and men and women in industrial employment, notwithstanding the efforts to minimise these results, have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. A large number of unrecognised or partially recovered consumptives have entered the Army or have been employed at high wages in munition and other works. In many instances there have been overwork and excessive exposure to irritating dust. Commonly, also, owing to great migrations of military and civil population, there has been overcrowding under conditions unfavourable to health. These are the outstanding facts. They will need to be further considered in the light of the current year's experience.

The experience in this country appears to coincide with that of the continental countries engaged in the present war. In all of them, so far as can be gathered from official information, tuberculosis appears to have been more rife and more fatal than prior to the war. It is proper to state that this unfavourable record would almost certainly have been worse but for the organised efforts to improve housing conditions in areas the population of which has been swollen by war work, and especially for the efforts made by the Government to secure improved conditions of work for munition workers, as well as to cope with the special housing difficulties which have arisen. I may draw attention, furthermore, to the fact that notwithstanding the increase in the population of England and Wales in the interval, the deaths from pulmonary tuberculosis were fewer than in so recent a year as 1902.

Tuberculosis and the war.—In May, 1916, the Local Government Board, after consultation with the Army Council, circularised the local authorities concerned in tuberculosis schemes, asking them to arrange for their tuberculosis officers to assist the military authorities in the examination of recruits suspected to be suffering from tuberculosis. The action taken in response to this appeal has been of material assistance to the military authorities.

About the same time the Board issued a general Order extending their Tuberculosis Regulations and making it obligatory on every medical officer of health to send to the Army Council, London, a list of all male persons between the ages of 18 and 45 who had already been notified to the medical officer of health as suffering from tuberculosis, and to keep the list up to date by the sending of weekly lists of newly notified males between the same ages to the Army Council. By this means it has been possible for the Army Council to inform each Medical Board of the names of tuberculous men in their respective areas.

REVIEW OF THE POSITION AS TO THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.

In view of the association of war conditions with considerable increase of pulmonary tuberculosis, it appears desirable to gives a summarised statement of the action specially directed in recent years to the control of tuberculosis. Prior to 1911 excellent local work had been done in a relatively small number of areas in direct efforts to control the spread of tuberculosis, in addition to the previous

[1] From the Annual Report of the Medical Officer of the Local Government Board for 1916-17, with permission of H.M. Stationery Office.

general measures, such as improved sanitation, better housing, more satisfactory nutrition, and especially the hospital treatment of a considerable proportion of sickness generally, including a large proportion of the advanced cases of tuberculosis. The important measures directed to the reduction of infection from bovine infection are not included in this analysis; but it may be noted that the final report of the last Royal Commission on Tuberculosis appeared in 1911; and that although the prevention of the possibility of human infection from cow's milk is still very incomplete, the pasteurisation or boiling of milk for human consumption is more generally practised than in the past. The Milk and Dairies Act of 1914 will provide after the war the machinery for much more efficient control over bovine tuberculosis.

The steps towards direct administrative control of tuberculosis may be summarised as follows:—

Compulsory notification of Pulmonary Tuberculosis, Poor-law cases from Jan. 1st, 1909.

Compulsory notification of Pulmonary Tuberculosis, Hospital cases from May 1st, 1911.

Compulsory notification of Pulmonary Tuberculosis, Cases in the general population from Jan. 1st, 1912.

Compulsory notification of all forms of Tuberculosis, Cases in the general population from Feb. 1st, 1913.

National Insurance Act, 1911, Sanatorium Benefit, coming into operation, July, 1912.

Finance Act, 1911, provided capital of £1,116,000 in England and Wales for erection of sanatoria.

The Departmental Committee on Tuberculosis reported on April 3rd, 1912, that any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis should be available for the whole community and that the organisation of schemes would best be undertaken by the county and county borough councils. These recommendations were adopted by the Government, which undertook to provide out of the Imperial Exchequer one-half the net annual cost of schemes for the general treatment of tuberculosis which were approved by the Local Government Board. Following on the above, county councils and county borough councils were invited to formulate and carry into effect schemes for the provision of institutional treatment at dispensaries and in residential institutions; and such schemes have come into operation to a greater or less extent in most areas.

The extent to which schemes for the treatment of tuberculosis have come into operation may be gathered from the following comparative figures. In England in 1911 local authorities (other than Poor-law authorities) had about 1300 beds for the institutional treatment of tuberculosis, while there were 4200 beds in private sanatoria and voluntary institutions. In June, 1916, the number of beds provided by public health authorities had increased to 6072, and voluntary beds to 5821, a total of 11,893 as compared with 5500 in 1911. In 1911 there were only about 25–30 tuberculosis dispensaries. In 1917 this number had increased to 371. During 1912 and 1913 the Board's officers were engaged, with varying success, in persuading county councils and county borough councils to make a beginning with the formulation and establishment of tuberculosis schemes, and in the detailed negotiations as to schemes put forward by the authorities who desired to proceed. These efforts in the first half of 1914 were obviously becoming increasingly successful; but the declaration of war in August soon prevented further developments of tuberculosis work and seriously crippled and reduced the efficiency of existing work. The curtailment and deterioration of the work already organised necessarily became more marked as the military demands for medical officers and for institutions increased.

It may be stated generally that: (1) In only a relatively small number of county areas have fairly completed arrangements for the institutional treatment of tuberculosis come into operation. In most county boroughs deficiency of provision is less marked. (2) Even when fairly complete arrangements have been made, these have usually been in full operation for a short period only, and have been crippled more or less during 1915 and 1916.

A few county borough councils, who had organised sanatorium treatment prior to the passing of the National Insurance Act, form exceptions to these statements. Much excellent work has been done under the dispensary and other institutional arrangements organised by local authorities; and many patients have been restored to health and a still larger number have had their working power partially or wholly restored, while the possibility of their continuing to be foci of infection has been minimised. It must, however, be realised that the schemes of local authorities as a rule have only recently been initiated, that during the stage following initiation the progress made has been somewhat slow, and that this progress has been stopped to a great extent during the war. The linking up of the different agencies required to secure the full benefit of the schemes, which was being gradually organised, has also been seriously retarded by the war.

The tuberculosis arrangements are closely related in every particular to the work of public health authorities, and in each of the following paragraphs the closeness of this relationship will appear. The difficulties and defects of the arrangements hitherto made are set out here with a view to future action directed to their removal.

These difficulties and defects may be considered under the following headings: (1) With relation to the patient; (2) with relation to the private practitioner; (3) with relation to tuberculosis officers; (4) with relation to sanatoria; (5) with relation to chronic and advanced cases of phthisis.

(1) *The patient.*—In normal times a large proportion of consumptive patients refrain from applying for treatment until disease is fully established and they are incapacitated for work. Not infrequently this means that the patient does not consult a doctor until within a few months or weeks of his death. This, in part at least, is due to the conditions of private practice for the mass of the population before medical benefit under the National Insurance Act came into operation and tuberculosis dispensaries were established. Prior to this, if the patient was not a member of a "club," the fee payable to a doctor discouraged the patient from seeking advice for what appeared to be a relatively trivial ailment.

Education of the public as to the need to seek for advice for protracted coughs and colds or for other symptoms suggestive of the possibility of tuberculosis is badly needed, and until the working classes have realised the importance of the early diagnosis and treatment of catarrhs and tuberculosis and of the removal of the conditions (bad housing, overcrowding, dusty indoor occupations, &c.) which favour these, the arrangement for coördinated measures for the treatment of tuberculosis can have only partial success.

Even when an insured patient is informed by his doctor that he is consumptive, delay in receiving sanatorium benefit is often caused because of the insured patient's unwillingness to go into an institution until his 10*s.* weekly sickness benefit is about to be reduced to 5*s.* Then he accepts a recommendation for sanatorium treatment. In such cases it often happens that hospital treatment is really required.

In the three years of the present war the temptations to neglect symptoms pointing to consumption have increased; as have, also, temptations to conceal the fact of the existence of consumption. Many consumptives have felt impelled to take their part in the national work of the war. A large number of recovered or partially recovered consumptives have been fighting as soldiers. Although not a few of these have been able to withstand the strain of active warfare, the majority unfortunately have broken down, and their lives have been curtailed by the great adventure. In many other instances unrecognised and latent tuberculosis has been brought into activity by the strain of a soldier's life, and the records already show that the war will be responsible for material national increase in tuberculosis, with a consequent increase in the death-rate from this disease.

The dearth of workers and the associated high wages have led to the employment of a large number of semi-invalids in industrial life. The temptation of the high wages has in many instances led both men and women to refuse sanatorium treatment or other systematic treatment.

(2) *The private practitioner.*—The medical attendance of the majority of patients in this country is organised under the conditions of private practice, whether for insured patients or others. It is to the private practitioner that most patients resort, and the early recognition and treatment of disease depends primarily on his skill, on his not being so overworked as to be unable to devote ad quate time to the examination of each patient coming under his care, and on his willingness to refer doubtful cases for consultation with the tuberculosis officer. It is not surprising that under war conditions, when nearly every doctor remaining in civilian

practice is overworked, these conditions are not fulfilled. That they have not been fulfilled generally, apart from the war, is shown by evidence derived from many areas.

Belated notifications.—Notification is often delayed when the case has been recognised, and for this, in some areas in which the medical officer of health or tuberculosis officer takes little useful action, if any, after notifications have been received, the Public Health Authority may be held responsible. In previous reports it has been repeatedly urged that notification depends largely for its completeness and promptitude on its being followed by action beneficial to the patient. It *has no* administrative value *per se*, its utility depends on the action which follows on notification. It is only when the medical officer of health, the tuberculosis officer, and the medical practitioner coöperate in securing the patient's welfare, by improving the conditions under which he lives and works, by measures of cleansing and disinfection, by safeguarding the health of the patient's family, and by a course of institutional treatment when this is indicated, that the possible utility of notification is realised.

At present, cases of tuberculosis which have been under medical care sometimes are not notified until after the death of the patient; other notifications may be received by the medical officer of health within a few weeks or months of death; and the patient may have been ill, with symptoms which pointed to tuberculosis, for a year or two before his case is notified.

The failure to notify is especially great for cases of non-pulmonary tuberculosis; and even when these cases are notified, often no systematic inquiry is made by the medical officer of health or the tuberculosis officer. Systematic family inquiry in such cases not infrequently leads to the discovery of overlooked cases of pulmonary tuberculosis.

Failure to notify may also be due to non-recognition of tuberculosis by the medical practitioner in attendance. This may be due to the medical practitioner being overworked. It is often owing to the tuberculosis officer not being in touch with him, and consequently opportunities for consultation have not been embraced. If greater coöperation were the rule, a much higher proportion of cases would be recognised at the earlier stage when no sputum is available for examination, and the tuberculous character of a large number of cases of "chronic bronchitis" would be recognised.

It is well known that failure to recognise a case of pulmonary tuberculosis until tubercle bacilli are detected in sputum implies that the disease has made considerable progress. In my annual report for 1913–14 I gave figures illustrating the fact that even when there is sputum its examination as a means of diagnosis is utilised to a most variable extent in different towns. Failing this examination, a large number of cases of pulmonary tuberculosis continue for long periods to be treated as bronchitis.

(3) *The tuberculosis officer.*—Few of these officers had been appointed in 1912, but in June, 1915, the number had increased to 238, most of them recently appointed. During the last three years they have been largely replaced by part-time medical officers, and the work has been reduced to a minimum. The experience gained in the short time during which tuberculosis officers have been at work enables a number of points to be stated by way of indicating the lines for future development rather than of criticism of past work. The new service in some areas has been regarded with suspicion by medical practitioners, and little use has been made of the facilities for consultation with the tuberculosis officer at the dispensary or elsewhere. There was an insufficient number of doctors for the new service with adequate experience of the diagnosis and treatment of tuberculosis on modern lines; and some of the less experienced did not secure the confidence and coöperation of private practitioners. This condition, which was unavoidable at first, is only temporary.

The medical officer of health is responsible for the execution of the work under the Board's Tuberculosis Regulations, and his relation to the tuberculosis officer has not always been satisfactory. This has often been due to the tuberculosis officer concerning himself with the treatment of the patient while giving little attention to his hygienic circumstances. It is unnecessary to repeat remarks made in previous annual reports on this point; but one of the first tasks to be undertaken when normal conditions are resumed should be to secure more complete coördination of official tuberculosis work on its therapeutic and hygienic sides.

The importance of examination of home contacts has been emphasised in past reports, but this work has not hitherto been developed to an adequate extent. In some districts so far it has remained entirely in abeyance, and during the war the Board, in order to enable doctors to go on military service, have been compelled to inform public health authorities that this contact work may be intermitted.

In some, especially in smaller, districts the medical officer of health has not carried out his duties completely under the Tuberculosis Regulations, and both from his standpoint and from that of the tuberculosis officer there is need of more complete coöperation than has hitherto been secured.

What is needed is that the organisation of the tuberculosis dispensary shall be in close touch with the special work of the medical officer of health. Both are concerned in home visiting and in supervision of the patient at home, and the visitation should be so arranged as not to be duplicated. The extent to which the tuberculosis officer has succeeded in securing continuous touch with general practitioners has varied greatly in different parts of the country. The early detection of cases of tuberculosis and their successful treatment, with the regular supervision needed in their interests and that of their families, have followed naturally where the collaboration between general practitioner and tuberculosis officer has been secured.

(4) *Sanatoria.*—Pulmonary tuberculosis is the greatest cause of disablement and mortality in adult life. It causes one-third of the total mortality during a large part of the working years of life. It is, furthermore, a disease which is preventable. For these reasons its selection for a special benefit under the National Insurance Act is justified in the interest of national efficiency. Patients, especially workers, suffering from tuberculosis call for treatment. The only question is as to the most efficient methods of treatment. There is universal medical agreement on certain points. Open-air conditions of life, judicious feeding, and regulated rest and exercise or work are necessary to give the best prospect for the patient's recovery or improvement; and his hygienic training has a high value for the patient, while greatly increasing the safety of those about him. Even if the patient is not likely to recover, all will wish him to receive the treatment best directed to improve his health, or failing this, medical assistance and nursing under favourable conditions during his progressive decline. The objects to be aimed at are cure of the patient, or if this is improbable his treatment under conditions conducive to his comfort, and securing others from infection. Broadly speaking, sanatoria are intended to fulfil the first condition, hospitals the second, to the extent to which treatment in a residential institution is required.

These being the objects in view, the question is whether sanatorium treatment, as hitherto developed, has given the best results obtainable in the interest of patients and of the public. The number of beds provided for the treatment of tuberculosis under schemes of public health authorities has doubled since 1911. These are supposed in the main to be sanatorium beds proper. For the following reasons, however, a high proportion of the patients in these beds have been of what is known as the hospital type as defined below.

1st. The largest number of cases coming under the care of general practitioners and of tuberculosis officers are cases of advanced disease or of chronic consumption, in which complete recovery cannot be expected. These cases press for institutional treatment, and it is difficult to refuse it, even though the beds available are more suitable for patients in the earlier stages of disease. The fact that a high proportion of these patients are insured persons claiming sanatorium benefit, increases the difficulty under this heading. Although Insurance Committees are entitled to refuse residential treatment for tuberculous insured persons, and frequently do so on the advice of the tuberculosis officer, there is a natural tendency to give this even when it is scarcely expected that improvement will follow.

2nd. When such patients are received into a sanatorium there is a strong tendency for the medical officer to ask for repeated prolongation of treatment, even when his better judgment would oblige him to certify that permanent benefit is improbable. Not infrequently the same bed is occupied by a single patient for six or nine months who should have been replaced by earlier cases of disease requiring a shorter period of treatment and likely to receive permanent benefit.

Cases of pulmonary tuberculosis requiring treatment in a residential institution may be classified as follows:—

"*Sanatorium cases.*"—Cases in which permanent improvement or recovery can usually be anticipated.

"*Hospital cases.*"—Cases in which only temporary, though possibly prolonged, improvement may be anticipated.

The hospital group will include: (1) Patients who may be expected to recover considerable ability to work; (2) patients admitted for a short term for educational treatment; (3) patients with advanced disease, many of whom improve greatly under institutional treatment; (4) advanced cases requiring continuous medical care and nursing. Cases requiring special observation for the purpose of diagnosis or to determine the best form of continued treatment.

Hospital cases are such in the sense that they are not admitted with a view to the possibility of complete recovery. Probably they will improve under treatment, but recovery of permanent working capacity is not expected.

The duration of treatment required under each of the above headings varies greatly. During the last five years a large number of patients with chronic and advanced phthisis have been treated under conditions especially suitable for sanatorium cases, and the treatment thus given has proved unsatisfactory as regards arrest of disease. If in future the best results are to be obtained from treatment of consumptives in a residential institution, the decision as to the form of treatment in each case must be made solely on the medical needs of the patient. In the decision the hygienic conditions of the patient's home are necessarily considered, as if these are unsatisfactory both the patient and his family suffer. But if, in addition, regard is had to other considerations, and patients are chosen for sanatorium treatment on other than medical grounds, sanatorium treatment is bound to continue to give relatively unsatisfactory results.

(5) *The treatment of chronic and advanced cases of phthisis.*—Under present conditions a high proportion of the patients coming under treatment for tuberculosis will not recover their health permanently or completely. This being so, it is well that treatment of such patients should be considered from the point of view of ordinary medical treatment. Every patient is entitled to treatment, whether his illness be curable or not. A local authority undertaking such treatment may have regard to economy; but on the merits this must not be secured at the expense of the patient. Considered from the standpoint of the patient, the treatment of a considerable proportion of consumptives in residential institutions is most desirable. This is especially true for patients who are acutely ill, or ill with advanced disease, and who cannot be satisfactorily nursed in their own homes.

The question of treatment in residential institutions of patients suffering from phthisis at a probably incurable stage cannot, however, be considered solely from the standpoint of the patient's own interest. Nothing should be done, and nothing need be done, contrary to these interests; but public and personal interests alike point to the desirability of treating the consumptive under conditions which will minimise the possibilities of acquirement of infection by contacts.

For reasons of economy, as well as because of the unwillingness of patients to leave home, a large proportion of the infective lifetime of every consumptive and the whole of the lifetime of some consumptives will necessarily be spent at home. Measures for securing that he shall not be a source of massive infection to others must be reconciled with this economic consideration. Much can be done to secure this in connexion with domiciliary treatment or attendance at a dispensary, when associated with the oversight of the home conditions of patients. But experience has shown that in such cases home supervision is much more efficient when preceded by a short term of stay in a sanatorium or hospital for tuberculosis, in which the patient is trained in the hygienic and general management of his condition, including the proper use of sputum flasks, &c. Unless he is suffering from advanced disease it is advantageous for him also to be trained during this time to sleep in a shelter, preferably one of a type which can afterwards be lent out to the patient to be slept in by him at home, if sufficient open space is available near his home for this purpose. Much of the value of this educational treatment may be lost if the patient is not kept under helpful supervision afterwards.

At a later stage of disease, when the patient is unable to work or is bedridden, the necessity of continuous care and nursing arises. For the majority of patients among the wage-earning classes this can seldom be given satisfactorily at home. The experience of large towns shows that such patients have during the last 20 years been attended to an increasing extent in Poor-law infirmaries and in special institutions; and this treatment and simultaneous segregation of patients, who would otherwise have been nursed under unsatisfactory domiciliary conditions, must be credited as being largely responsible for the decline in the death-rate from tuberculosis which has occurred during the same period, notwithstanding increasing urbanisation of the population with its associated relatively high mortality from tuberculosis.

Happily it is becoming more generally appreciated that no scheme for the control of tuberculosis in an administrative area can be regarded as satisfactory which does not make provision on a considerable scale for the institutional treatment of advanced cases of consumption beyond what in most areas has been so far provided.

Housing in relation to the prevention and treatment of tuberculosis.—Not infrequently it is assumed that in the prevention of tuberculosis improved housing is an alternative policy to the provision of sanatoria and hospitals for consumption. It is also suggested that sanatoria and hospitals may in a large measure be dispensed with in the treatment of consumptive patients. The two points need to be considered together, inasmuch as measures for the treatment and prevention of tuberculosis are to a large extent identical. An essential part in the prevention of the spread of tuberculosis consists in housing patients under conditions in which they will not spread infection. When a separate bedroom is not already available this may be done by provision of an additional bedroom at home or by removing the patient to an institution. In practice both plans are desirable, according to circumstances.

Institutional treatment is needed when special sanatorium treatment is required or when the patient needs skilled medical attendance and nursing which cannot be obtained at his home. Satisfactory treatment is extremely difficult to organise at home both for early and for advanced cases of consumption, and although much may be done to improve home conditions, this difficulty will, in large measure, continue to apply for a large proportion of the total population.

Statements to the opposite effect are made without adequate consideration of the general facts as to national housing. At the last Census 3,139,472 persons, or 8·7 per cent. of the total population of England and Wales, were living in dwellings containing less than one room for every two persons, there being an excess of 780,776 persons in these dwellings on this basis. Of the total population 2,580,814, or 7·1 per cent., were living in one or two-roomed dwellings, and 4,429,119, or 12·3 per cent. of the total population, in three-roomed dwellings. Under these circumstances the impracticability of providing adequate and still more of providing separate bedroom accommodation for consumptive patients is evident. Satisfactory family life even for a healthy family is difficult to maintain under the above conditions. The conditions become dangerous when a sick person has also to be housed, intimate contact with whom is likely to infect others. The problem, in large measure, has been solved for the acute infectious diseases by establishing isolation hospitals; and although these hospitals may not have completely fulfilled expectation in the amount of reduction of infection secured, they have done great work in this direction, and have made themselves indispensable under modern social and industrial conditions.

In the acute infectious diseases the onset of secondary cases occurs after a few days' incubation; in pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect. It is, however, agreed that such infection occurs, that some persons, and especially the young, more easily fall victims, and that even the more resistant may fall ill from tuberculosis when exposure to infection has been protracted or when, otherwise, the infection has been in massive doses.

The bearing of these facts on the institutional treatment of consumptives is obvious. They cannot be institutionally treated continuously, even if they were willing, and there is no need for residential institutional treatment during a large part of their sick life, assuming that they follow out the simple instructions in which they have been previously educated, preferably in a residential institution.

But sanatorium treatment and, even more important, hospital treatment of consumptives on the lines indicated in previous paragraphs must form an essential part of a satisfactory programme for the treatment and control of tuberculosis.

The Local Government Board's grants to local authorities for the institutional treatment of tuberculosis have not yet reached a quarter of a million of money in any one year. If to this be added the sum spent on the institutional treatment of insured consumptives, after deducting the contributions of insured persons and employers, the total cost borne by Government funds is certainly less than half a million sterling per annum. This is apart from local expenditure.

Housing and institutional treatment for tuberculosis cannot properly be regarded as alternatives. They are necessary complements to each other, and there must be increased expenditure in both directions. Housing is a problem in two divisions: For the healthy and for the sick. Special housing in institutions is needed for the sick when the care which their condition requires is not available in the home of the patient. This is true, whether the patient will be cured by the institutional treatment or not. But it is the duty of administrators so to arrange the conditions of admissions to, and continued treatment in, institutions that the provision will be used in the most economical and efficient manner possible, consistent with the welfare of the patients concerned.

STERILISATION BY DAKIN'S SOLUTION AND THE OCCURRENCE OF SECONDARY HÆMORRHAGE.

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SINCE the treatment of septic wounds is of prime importance and great improvements are being effected in it, no excuse is necessary for reinvestigation by a novel method of the relative potency of certain antiseptics which are fashionable at the present time. An impartial judgment from time to time of the value of the methods in use and of others proposed proves of direct benefit to the wounded under treatment. Such inquiries are indeed required to safeguard the patient against methods, which although new or modifications of older procedures, are not based on adequate trials, and against methods which the wounded have seen described in the lay press and feel aggrieved at not receiving.

Object and Nature of Present Inquiry.

The ideal antiseptic has yet to be found, all those in use possessing certain disadvantages. The present inquiry had its origin in the question of whether or not secondary hæmorrhage is more frequent under some forms of treatment at present in vogue than in others, suspicion having been aroused that the walls of healthy vessels lying exposed in wounds might be corroded by the antiseptic solution employed. The histological investigation of vessels from which secondary hæmorrhage had occurred has not lent support to this suspicion, as, without exception, they were found to have suffered previous damage. In a few cases the damage was purely physical, and in one instance this physical injury was associated with an aseptic thrombosis. In most cases septic thrombosis was present. In yet others the bleeding point was surrounded by granulations, showing that corrosion was not the cause of the hæmorrhage. In another paper I have discussed the frequency of thrombosis in association with infected wounds.[1]

Resort was had to experiment with chloramine, Dakin's solution, Lorrain Smith's solution (eusol), and flavine. For purposes of comparison parallel experiments were made with iodine and mercury perchloride.

The method adopted consisted in the immersion of living tadpoles in various dilutions of the substances to be tested, one advantage thus gained being the elimination of the question of soaking the skin with water, such as occurs when watery fluids are applied to wounds. The experiments were performed at a temperature of 24°–26° C. The following observations were made.

[1] British Journal of Surgery, April, 1917.

1. By snipping off the tail, some distance from the anus, and dropping it into broth, it was first ascertained that the skin of the tails of the tadpoles yielded a heavy growth of Gram-positive and negative organisms—bacilli, streptococci, and also coliform bacilli—and were therefore suitable for this investigation.
2. The lethal concentrations of the several solutions for the tadpole were then determined, and the condition of the tails as regards sterility ascertained immediately after death, the nature of the lethal action being left out of consideration as immaterial.
3. When a minimum dilution, sterilising the skin of the tail at death had been found, a new series of experiments was made to ascertain if sterilisation could be effected in non-lethal solutions.
4. Thereafter the minimum time required to sterilise the tails was ascertained, and then was compared with the time required to cause the death of the animal.
5. Finally, the corroding or digestive action of the several solutions on the abdominal wall was noted.

After the preceding necessary preliminary experiments had been carried out the whole series of observations could be combined simultaneously in a long series of beakers, each containing one or more tadpoles immersed in increasing dilutions of the substance or substances. The accompanying tables give the results of such series of experiments.

TABLE I.—*Dakin's Solution (Diluted to give the Concentration of Hypochlorite shown in Column 1).*

Dilution of hypochlorite.	Average time required to cause death.	Condition of skin of tail at death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 1,000	3 min.	Sterile.	3 min.	35 min.
1 : 2,000	6 ,,	,,	3 ,,	3 hrs.
1 : 4,000	12 ,,	,,	5 ,,	4 ,,
1 : 10,000	18 ,,	,,	5 ,,	44 ,,
1 : 25,000	30 ,,	,,	10 ,,	Action absent.
1 : 50,000	35 ,,	,,	16 ,,	,,
1 : 100,000	60 ,,	,,	30 ,,	,,
1 : 500,000	Alive after 24 hrs.	Sterile after 4 hrs.	—	,,
1 : 1,000,000	,,	Not sterile after 24 hrs.	—	,,

TABLE II.—*Eusol (Diluted).*

Dilution of hypochlorite.	Average time required to cause death.	Condition of skin of tail at death.	Maximum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 2,000	5 min.	Sterile.	2 min.	5 hours.
1 : 4,000	6 ,,	,,	3 ,,	Action absent.
1 : 10,000	8 ,,	,,	4 ,,	,,
1 : 25,000	16 ,,	,,	5 ,,	,,
1 : 50,000	35 ,,	,,	12 ,,	,,
1 : 100,000	60 ,,	,,	30 ,,	,,
1 : 500,000	Alive after 24 hrs.	,,	—	,,
1 : 1,000,000	,,	Not sterile after 24 hrs.	—	,,

TABLE III.—*Chloramine.*

Dilution of antiseptic.	Time required to cause death.	Condition of skin of tail at time of death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 50	18 min.	Sterile.	3 min.	No appreciable solvent action.
1 : 100	25 ,,	,,	6 ,,	,,
1 : 200	35 ,,	,,	10 ,,	,,
1 : 400	45 ,,	,,	15 ,,	,,
1 : 1,000	1¼ hrs.	,,	25 ,,	,,
1 : 2,000	2 ,,	,,	30 ,,	,,
1 : 4,000	2¾ ,,	,,	1½ hrs.	,,
1 : 10,000	5¼ ,,	,,	1¾ ,,	,,
1 : 100,000	Alive after 24 hrs.	Not sterile.	Not sterilised.	,,
1 : 500,000	,,	,,	,,	,,
1 : 1,000,000	,,	,,	,,	,,

TABLE IV.—*Flavine.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at time of death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 1,000	1 hr.	Sterile.	¾ hr.	No solvent action.
1 : 2,000	2 hrs.	Not sterile.	Not sterilised.	,,
1 : 4,000	3 ,,	,,	,,	,,
1 : 8,000	8 ,,	,,	,,	,,
1 : 16,000	16 ,,	,,	,,	,,
1 : 32,000	Alive after 24 hrs.	Not sterile after 24 hrs.	,,	,,
1 : 50,000	,,	,,	,,	,,

TABLE V.—*Iodine.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 10,000	5 min.	Sterile.	3 min.	No solvent action.
1 : 50,000	20 ,,	,,	20 ,,	,,
1 : 100,000	30 ,,	Not sterile at death.	—	,,
1 : 250,000	1 hr. 50 min.	,,	—	,,
1 : 500,000	2½ hrs.	,,	—	,,
1 : 1,000,000	Alive after 24 hrs.	,,	—	,,

TABLE VI.—*Mercuric Chloride.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at time of death.	Maximum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 2,500	11 min.	Sterile.	4 min.	No solvent action.
1 : 5,000	13 ,,	,,	4 ,,	,,
1 : 10,000	30 ,,	,,	15 ,,	,,
1 : 100,000	1¼ hrs.	,,	45 ,,	,,
1 : 500,000	2¾ ,,	,,	2 hr.	,,
1 : 1,000,000	4 ,,	,,	More than 2 hrs.	,,
1 : 5,000,000	5 ,,	Not sterile.	—	,,

Results of Experiments.

A comparison of the tables shows that Dakin's and Lorrain Smith's solutions (Tables I. and II.) are practically parallel both in their lethal effects and in their power to sterilise living tissue, the latter action taking place in, roughly, half the time required to produce death, but that the solutions differ in their power to digest dead tissue. Although in the table eusol is shown as digesting the abdominal wall in five hours, it should be noted that the effect was in no way comparable to that obtained with the highest dilution of Dakin's solution having this action. In higher concentrations of Dakin's solution the tadpole, after dying, was speedily reduced to a little heap of sand representing the intestinal contents, but with eusol this result was not obtained.

Chloramine (Table III.), by comparison with Dakin's solution and eusol, is shown to be relatively less toxic to the animal and the minimum time required to sterilise the tail is a much smaller fraction of the time required to kill the animal, being roughly ¼ contrasted with a ½ for the former substances. These three preparations have, therefore, the common property that lethal action and bactericidal effects exercised upon the surface can be separated.

Flavine (Table IV.), or to be quite correct the two samples examined, has not the same power to sterilise the skin of the tadpole's tail. The figures given in the table were the best obtained in four series, sterilisation having been obtained only once at death by a dilution of 1 in 2000.

Iodine (Table V.) and mercury perchloride have only been tested for the purposes of control, because, so far as I am aware, the method employed has not before been applied to a comparison of antiseptic power. For iodine it may be noted that it is efficient—a point of interest—because it is so extensively employed as an application to the skin of the wounded, as well as in other circumstances. Mercury perchloride calls for no comment beyond a reference to the figures (Table VI.) as ascertained. The only point of interest in the present connexion is that with these substances lethal action and bactericidal power coincide in the higher dilutions. This is also the case for the strongest concentration of flavine, bactericidal power and lethal action not being separable.

Limitation of Corroding Action.

As the question of the corroding action of Dakin's solution on the walls of healthy vessels has been raised in connexion with secondary hæmorrhage, and is one of importance, a series of experiments have been made on this subject. It is well to show how this deleterious action can probably be excluded by the present observations.

The anterior abdominal wall of the tadpole is a delicate membrane formed mainly of two layers of cubical cells. Normally the intestines do not show through the anterior abdominal wall, whether in the living or newly dead tadpole; but in the event of a corroding or digestive action, the wall thins and they soon begin to be visible. Finally, rupture of the abdominal wall is indicated with great exactness by the intestines being set free and shooting out, somewhat like a watch-spring released. A tadpole having been killed by immersion in water in which a trace of chloroform had been shaken up, was put into a beaker of hypochlorite solution simultaneously with a live tadpole of the same size, and the time required for digestion of the abdominal wall noted in the two cases. Results such as the following were obtained:—

Dakin's Solution.

Dilution of hypochlorite.	Time for abdominal wall to rupture.	
	Tadpole immersed when dead.	Tadpole immersed when living.
1 : 1000	30 minutes.	40 minutes.
1 : 2000	2½ hours.	3 hours.
1 : 4000	3 hours 40 minutes.	3 hours 55 minutes.

In such an experiment the action of the solution on the abdominal wall while the circulation remains intact for some time is contrasted with its action on the same delicate and still living membrane after the services of the circulation have been impaired or entirely lost. The differences between the time required for the abdominal wall to rupture in the living and the dead animal respectively are larger than the interval required to produce death, as shown in column 2 of Table I.[2]; and hence the vitality retained by the skin immediately after death of the animal offers resistance to the digesting action of the fluid. Moreover, if living tadpoles be compared with those that have been kept in water for an hour after death, the difference is greatly increased, showing that the more vitality is impaired, the more readily the tissue is attacked, and probably that dead tissue is immediately attacked. Therefore the activity of the circulation and the retention of local vitality place limitations on the corroding action of Dakin's solution, while on the other hand the absence of a circulation and reduced vitality promote this action.

It would appear from the above table as if the local action of Dakin's solution was held in check by an efficient circulation either by providing protein-containing fluid or by carrying off and rendering harmless the hypochlorites as they approach living tissues without entering into combination with them—i.e., killing them. It seems reasonable to infer from experiments with such a delicate membrane that equilibrium between the two processes is well established within an extremely narrow zone of tissue—in this case two layers of cubical epithelial cells—and is an expression of the limited extent to which Dakin's solution, owing to its great lability or chemical instability, can penetrate or injure living tissue in the presence of an efficient circulation.

[2] Death occurred, for 1 : 1000 in 3 and for 1 : 2000 in 6 minutes; for 1 : 4000 in 12 minutes. The differences are therefore 7 and 23 minutes respectively for the first two dilutions. The approximation of the times for the living and the dead tadpoles shown in the above table is characteristic of all reactions taking place in the extremes of dilutions at which they occur at all, and may be left out of the argument, except in so far as the table shows on the whole, that, if action on living tissue does not commence during complete vitality, still an impairment of vitality by the solution itself cannot be excluded, and that the solvent action is probably being attempted all the time, and becomes efficacious immediately whenever the impairment, short of death, becomes sufficient. Further observations are in progress on the action of the hypochlorites on the web of the frog's foot both when the circulation is active and arrested.

This lability has been urged as a disadvantage, and certainly the necessity for repeatedly renewing the supply of the solution is a practical inconvenience; but the very *lability* of the hypochlorites is probably the essence of their efficacy in wound treatment, as contrasted with antiseptics of known stability; and it still remains to be proved that *the application* of hypochlorites through other than watery media is equally efficacious, as in their application by means of the oily media now undergoing trial, and which it is *hoped* may act as reservoirs parting slowly with the active ingredient and therefore not requiring frequent renewal.

The other substances as tested are devoid of this solvent action on dead tissue, which, unless of the highly delicate and easily balanced nature characteristic of Dakin's solution, may readily be dangerous as in the case of the ferments. The abdominal wall of a living mouse is rapidly digested by 1 c.c. of a 1 per cent. suspension of Fairchild trypsin, so that the intestines lie free from the cavity in a quarter of an hour, whereas 30 times this quantity of trypsin is borne without any evident effect when injected intravenously.

Secondary Hæmorrhage.

I have heard different opinions expressed as to the manner of action of Dakin's solution. The foregoing observations seem to make it clear that in a septic wound it acts both as an antiseptic and as a cleansing agent or remover of dead tissue liable to serve as a nidus for micro-organisms. The latter are caught, as it were, between two fires, the antiseptic action of the hypochlorites, on the one hand, and the natural defences of the living tissues with which they are brought in direct contact on the other. It may, of course, be a disadvantage to remove, say, all healthy fibrinous exudate from the surface of the wound, but this is more than counterbalanced by the removal of all dead tissue. The removal of dead tissue is extremely well exhibited in a case brought to my notice by Captain F. L. A. Greaves, R.A.M.C. The anastomotica magna had been ligatured in an open wound and the visible free end, under the action of Dakin's solution, began to show signs of disappearing, so that the occurrence of secondary hæmorrhage was feared. Nothing of the kind happened, however, the erosion stopping just before the point of ligature was reached.

Were the erosion of sound vessels the usual cause of secondary hæmorrhage this accident would occur in practically all cases. The evidence adduced above to the effect that erosion of the delicate epithelial membrane covering the abdomen of the tadpole is resisted by its local vitality may legitimately be taken as evidence that the same holds for man in view of the experience gained in the treatment of wounds. Part of the frequency of secondary hæmorrhage may be due, not to the action of the solution, but only to its improper application, say by pressure of the point of the Carrel's instillation-tube badly applied, and thus leading to injury. Where, however, secondary hæmorrhages are common or gross, or obvious septic thrombosis can be excluded, the accident should be regarded rather as an indication that the surgeon to-day can preserve wounded limbs damaged to such a degree that earlier in the war either the wounded man died or the limb was amputated. Even the most careful cleansing now habitually carried out may fail to detect small injured or infected vessels with or without thrombosis, from which the bleeding apparently almost always arises. The position in regard to secondary hæmorrhage appears to me to be very similar to that attending the occurrence of local tetanus or the more familiar post-diphtheritic paralysis. Both the latter accidents are met with as a result of successful attempts in saving life.

During the war much has had to be learned as to dressing or treating septic wounds as contrasted with those of intentional surgery, and although the goal has not yet been reached great progress has been made so far as one who is not a surgeon, although constantly observing wounds at a general hospital and a surgical observation hut, can judge.

Victor Hugo, writing of events supposed to have taken place in 1832, tells us: "The dressings were complicated and difficult ..... and it was not without difficulty that chloruretted lotions ..... reached the end of the gangrene" ("Les Misérables"); and perhaps had the beneficial eras of antiseptic and aseptic surgery not for the time banished such wounds as Victor Hugo alludes to, we should have been better prepared for the proper application of the hypochlorites, or have already obtained improvements on them.

(*Continued at foot of next column.*)

THE RETRACTION OF BLOOD-CLOTS,

WITH TWO METHODS FOR SECURING A LARGE YIELD OF SERUM.

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I. THE EXTERNAL FACTORS.

IN spite of the large amount of work that has been directed to the study of the coagulation of the blood, comparatively little attention has been attracted to what is in reality a part of the process—namely, the retraction of the clot by which the serum is squeezed out. The question is of much theoretical interest, and now that so much use is made of serum in diagnosis and treatment, of some practical importance. In this and a subsequent article I propose to discuss the theory of the process, and to describe two methods by which a very full crop of serum may easily be obtained.

The Process of Retraction of the Clot.

The main phenomena are well known.

Blood when drawn from the living body, and collected in a non-living vessel, clots after a longer or shorter time. At first the clot is a uniform, soft, mass. After a period which varies from a few minutes to several hours, it usually begins to contract, and in doing so squeezes out from itself a larger or smaller amount of serum, mixed, in most cases, with red corpuscles and leucocytes. This serum usually makes its appearance in two situations—between the clot and the sides of the vessel, and on the surface of the clot—where at first a few small drops of serum appear, which, by their coalescence, form ultimately one or more large drops, or a complete layer of fluid. The clot is heavier than the serum, and tends to sink, so that when the process is completed it forms a dark purplish mass, having approximately the shape of the containing vessel, lying at the bottom of a greater or smaller amount of serum.

When clotting takes place a fine network of filaments of fibrin is formed, enclosing within its meshes serum, red corpuscles, and leucocytes. This is the first stage of the process, or coagulation. In the second stage, or retraction, each filament tends to contract, and, when it can do so successfully, the serum and some of the red corpuscles are squeezed out, and a firm mass of fibrin containing a comparatively small number of red corpuscles is left. The leucocytes, I may add, almost certainly make their way through the clot by their own active movements: the serum and red corpuscles are, of course, squeezed out mechanically.

A little consideration will show that the effects of this contraction of the fibrin filaments will differ fundamentally in the centre and at the periphery of the clot. If we consider a point in the centre of the clot (say a red corpuscle surrounded by a network of fibrin) we shall see that it is exposed to equal and opposite tensions in all directions, and as a result there is a general raising of the pressure in the mass, but no tendency for the movement of the serum or of the corpuscles in any one direction rather than in another; just as a sponge lying at the bottom of the ocean and permeated with water under high pressure will be neither compressed nor expanded. Retraction, therefore, must commence at the periphery—either at the sides of the vessel or at the surface of the clot. Here the conditions are quite different. Consider the case of a point lying in contact with the wall of the vessel. It also will be pulled on by fibrin filaments, but not in all directions. Those filaments which lie parallel to the surface in their contraction will have exactly the same effect as would be exerted by a stretched membrane surrounding the clot, tending to compress it and make it smaller. Those which are not parallel to the surface are either vertical thereto, in which case they tend to pull the clot away from the containing vessel, or at an angle, in which case they can be divided into their horizontal and vertical components, one tending to make the clot contract, the other pulling it away from the glass. At first these tensions are balanced by the adhesion of the

(*Continued from preceding column.*)

It would have been impossible for me to perform the numerous simple but tedious experiments, of which examples are given, without the able assistance of Private T. C. Reynolds, R.A.M.C. In conclusion, I have to thank Colonel H. E. Cree, A.M.S., for granting me facilities for carrying out this investigation.

clot to the wall of the vessel, and if this is sufficiently firm retraction will never take place; if not, the clot first detaches itself from the surface, and then continues to contract. At the upper surface there is no such counterbalancing pull, so that it is more easy for contraction to take place; hence we see, as a rule, that serum appears first on the free surface, especially in large clots. As a rule, however, not much fluid appears in this situation. It is noteworthy, also, that there is usually a decided difference between the serum which appears on the top and at the sides of the clot, that in the former situation being turbid from red corpuscles, that in the latter being quite clear. The reason for this difference is obvious. When the blood is drawn the corpuscles immediately begin to settle, and by the time clotting has taken place (unless this is very unusually rapid or unless the corpuscles sink with unusual slowness) there is a layer of corpuscle-free plasma on the surface, and when this clots it interposes a barrier which allows the escape of serum, but not of corpuscles.

Under certain circumstances (rapid settling of the corpuscles or slow coagulation of the blood) a thick layer of plasma may be formed before coagulation occurs. In this case the clot that forms may be so firm that not even serum is squeezed out. But here, I think, other factors may come in.

A similar process takes place in the walls of the lower part of the clot as retraction proceeds. The fluid that is squeezed out at the beginning of the process contains very many corpuscles, but as it continues these become less and less numerous, until at last only pure serum escapes. This is obvious on careful examination, and I have corroborated it by actual count. Here it is easy to see that the corpuscles which have been entangled near the surface will escape very easily, and in doing so leave a relatively firm mesh impassable to corpuscles, though permeable to serum. After a time all the corpuscles which have passages open to them will have escaped and the sides of the clot will become to all intents and purposes similar to the non-corpuscular layer at the top of the clot. That this is the case may be shown by cutting a section of a clot in which complete retraction has taken place.

Consideration of External Factors.

I will now consider the factors which cause a difference in the retraction of different clots—why some retract quickly and give an abundant crop of serum, and some do so slowly, giving a smaller crop, or fail to retract at all.

Two sets of factors have to be considered. The first, which I shall call the internal factors, are those which differ in different specimens of blood. The second, the external factors, which I shall consider are the size and shape of the containing vessel, the nature of its walls, temperature, and gravity. These are the main factors which we can alter more or less at our disposal, and in doing so cause great alterations in the process. This paper deals with these external causes alone.

(1) *The Shape and Size of the Vessel.*

Reverting to our idea that the contraction takes place at the surface of the clot, which behaves as if it were enclosed in a slightly stretched elastic membrane, theory shows what experiment clearly proves, that these factors are of prime importance. This has not, I think, been previously recognised. In dealing with ordinary surface-tension, such as is always present at the surface of a liquid, it is a well-known law, based on simple mathematical considerations, that in the case of curved surfaces the smaller the sphere of which they form part the greater the tension, the tension per unit being constant. Thus if two soap-bubbles of different size are connected the one with the other by means of an open tube, the smaller will continue to contract (blowing out the larger one as it does so) until it forms a flat diaphragm across the tube.

The force tending to draw the clot away from the surface is largest in small tubes, and gets progressively less in larger tubes, reaching its minimum in a vessel with flat walls, in which the retraction commences and is most marked at the angles.

In these experiments I have used human blood drawn directly from the veins. This has been collected in a tube lined with paraffin, in which it will keep unclotted for a sufficiently long time for the experiments to be made. Measurements, where necessary, are made with paraffined pipettes. The following may be quoted as a proof of the effect of the size of the tube on the process. The same specimen of blood was divided into eight tubes, two capillaries having an internal diameter of a little more than 1 millimetre, two narrow tubes having an internal diameter of about 4 mm., two "Wassermann" tubes with an internal diameter of 9 mm., and two test-tubes of 17 mm. The results were as follows:—

Diam. of tube.	½ hour.	1 hour.	2 hours.	4 hours.	24 hours.	Yield of serum.
17 mm.	No retraction.	No retraction, a little serum on the top.	No change.	No change.	No change.	0% except for a little at the top.
"	"	"	"	"	"	
9 mm.	No retraction.	No retraction.	No retraction, a little serum on the top.	Slight retraction	Marked retraction	21·5%
"	"	"	"	Nil.	Slight retraction	6·3%
4 mm.	No retraction	Retraction just obvious.	Much	Much.	Much.	30·7%
"	"	No retraction	"	"	"	29·2%
Capillary, rather more than 1 mm.	Abundant retraction	Abundant retraction	No obvious alteration.	No obvious alteration.	No obvious alteration.	56·0%
"	"	"	"	"	"	59·6%

Room temperature throughout.

As a result of a considerable number of observations I can make the following statements with regard to specimens kept at the room temperature. 1. Blood collected in capillary tubes always contracts completely, yielding the full theoretical amount of serum. In most cases it commences in less than 15 minutes and is complete, or nearly so, in another 15 2. In the tubes such as I use for Wright's collecting capsules, which have an internal diameter of 3–4 mm., retraction almost always takes place and is usually complete, or nearly so, but it is occasionally only partial and is always decidedly slower than in capillaries. 3. In Wassermann tubes retraction is the rule, but there are occasional exceptions. It is much slower, and not as a rule complete in less than 12–24 hours. 4. In large test-tubes it is very frequently absent and is always slow and often incomplete.

The practical application of this is that where a good crop of serum is required the blood should always be collected in tubes as small as is convenient.

(2) *Influence of the Nature of the Walls of the Vessel.*

If this is of such a nature that the fibrin filaments can attach themselves firmly thereto, much of the force of their contraction (which I believe can only act for a limited time) may be expended in tearing the clot from the wall, with the result that but little serum will be squeezed out. In dealing with glass vessels of ordinary cleanliness I do not find this is a factor of any great importance, and I have never yet found any medium which is sufficient to prevent the retraction of the clot from the walls of small tubes, provided the proper temperature is employed. In general the cleaner and newer the vessel the easier and quicker is the retraction; it takes place best of all in tubes that have recently been drawn out, and in a tube that has been dry sterilised whilst not quite clean it may be appreciably delayed.

In the course of a search for some material from which the clot would not detach itself at all I have had the best results with paraffin. A tube lined with hard paraffin and allowed to set will often show no trace of serum long after complete separation has occurred in an ordinary tube. I shall show subsequently how this fact is used in procuring a large and quick yield of serum.

I do not think a clot formed in a living vein retracts from the walls. I have never seen any unmistakable indication of this in sections of thrombosed veins, and have not found it to occur in some observations I made in vessels in amputated limbs. When separation of the clot, with resultant embolism takes place, I believe it is always due to a partial

liquefaction of the clot by the trypsin given off by the polynuclear leucocytes—or, of course, it may be separated by violence.

(3) *Effect of Gravity.*

If a freshly-formed clot be suspended in air, the process of expression is very rapid, the contraction of the fibrin being assisted by the weight of the serum, which tends to run out, just as water would do from a suspended sponge. But if the clot remains in the serum this assistance from gravity is very much less, and at first sight it may not be apparent how it is brought about at all, for the serum within and that outside the clot have, of course, exactly the same specific gravity, and that within will have no tendency whatever to drain away.

Two cases may be considered. In the first, which usually occurs in comparatively narrow test-tubes, the clot remains adherent by a "rim of attachment" at its upper angle of contact with the wall of the tube; retraction always begins at some point on the side, and extends until every point except this rim of attachment has detached itself from the glass. If we study such a clot (Fig. 1) we shall see that it has a wide top, a comparatively narrow neck, and a wider base, which is often almost or quite as wide as the tube, and may in some cases be almost spherical. The shape is due to the action of gravity on a soft mass, originally cylindrical, which is lifting itself up by the contraction of its surface membrane. The narrow neck is, of course, due to the stretching by the weight below, whilst the rounded shape of the base is due to the fact that all stretched membranes tend to assume a spherical form.

FIG. 1.



It surprises many to whom this phenomenon is first pointed out to realise that the very delicate rim of attachment should support the whole weight of the clot, but a little consideration will show that this is not really remarkable. When the clot is first formed it has, of course, the specific gravity of the whole blood (about 1056). As soon as retraction commences it begins to rise; some of the serum, which is lighter (sp. gr. 1030), escapes. At first the pull on the rim of attachment is practically nil. As the clot shrinks its specific gravity gradually rises, ultimately reaching something just under 1100. At this point it will only weigh, whilst in the serum, as much as if it has a specific gravity of 1100 – 1030, or 70. The force of gravity which helps to squeeze out the serum is never more than would be exerted on a cylinder of this specific gravity, suspended in air. It does help the process somewhat, as is shown by the narrow neck of the clot, from which the serum must be pretty thoroughly expressed. The slight weight of the clot whilst suspended in serum may be understood when we realise that the contraction of the fibrin filaments will be quite sufficient to lift a large clot bodily from the bottom of the tube.

If we cautiously insert a narrow pipette, doing as little harm to the rim of attachment as possible, and pipette off the serum, the clot will regain its full weight, so that the upper part will be forcibly stretched, and there will, in addition, be the direct action of gravity on the serum in the clot. The most efficient method by which we can assure gravity is by pipetting or drawing off the serum as fast as it is formed.

In the second case, which usually occurs in large vessels, the rim of attachment will not hold, and the clot sinks to the bottom. This is because the length of the rim increases only proportionately to the diameter of the vessel, whereas the weight of the clot rises in proportion to its cube. Here gravity helps, in that the upper part of the clot presses on the lower, and tends to press out the serum; but the conditions are much less favourable, for, firstly, the clot may be pressed against the walls of the vessels, and the serum be thus prevented mechanically from escaping; and, secondly, the compressing force exerted by the upper part of the clot tends to counteract the contraction of the lower part. Of course, if the clot does not separate itself from the walls of the vessel at all it may be necessary to separate it mechanically by means of a sterile wire, but where it can be avoided it is best not to do so; it is much bette attached at the upper rim as long as poss the serum off as soon as it appears.

(4) *Effect of Temperature*

This is of the highest importance, terms it may be stated that the nea ture of the vessel to that of the body more complete will be the retraction. I



every specimen of blood that I have ever seen has retracted at room temperature when kept in tubes about 3–4 mm. in diameter, though the retraction is not always complete and is usually slow. Retraction at incubator temperature is always rapid and complete. In tubes about 1 cm. in diameter retraction always takes place in the incubator, and is usually complete; at the r temperature it is sometimes absent usually slow and incomplete. In la tubes this is very frequently the c and even in the incubator there may not anything like the full theoretical yield e after 12 hours. In the ice-chest retractio usually absent or but very slight in anyth larger than a capillary tube, and may incomplete in these.

Another point of very considerable practi importance is this: it is the temperature which the blood is exposed when f drawn that is of chief importance determining the rate and completen of the retraction, and in some ca the effect of exposure to an unsuita temperature at this period cannot be aft wards undone.

One or two examples must be quoted:—

(1) A specimen of blood in a paraffined into two Wassermann tubes. One was ice-water, kept there for half an hour, kept at the room temperature. It showed 1¼ hours, and next day the percentage of s 13. In the control tube, which was kept ture throughout, retraction was well mark an hour and in 48 hours the crop of serum

(2) In a similar experiment four tubes which were incubated 1 hour, and then temperature. These gave 56·6 per cent. a serum. (The blood was from a slightly Two other tubes were kept at the room tem out. They gave 41·6 per cent. and 34·6 per c

(3) In this experiment two Wasserman were incubated from the first, two kep perature for 1 hour, then incubated, and for 1 hour, and then also incubated. Th shows the rapidity and completeness of the

—	½ hour.*	1 hour.	2
Incubated from the first.	Retraction nearly complete.	Apparently complete.	No
,, ,,	,,	,,	
Room temperature 1 hour, then incubated.	No retraction.	No retraction.	ret
,, ,,	,,	,,	
Ice-water, 1 hour, then incubated.	No retraction.	No retraction.	ret
,, ,,	,,	,,	M ret

* Not counting the first hour.

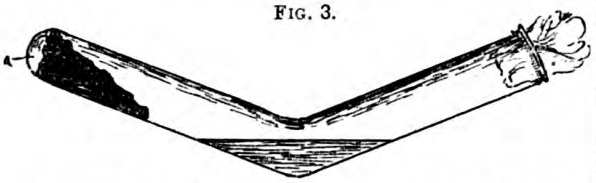
Hence when we wish to collect as much we ought to collect our blood in warmed tub as soon as possible. After an hour or two the room temperature if desired, but the ic avoided until complete retraction has taken add that this fact was first pointed ou Cartwright Wood.

I will conclude by giving two methods by which a very full crop of serum can be obtained in a very simple manner, and one which does away with any chance of contamination or the addition of foreign substances. They are based on the power that a clot has of adhering with some tenacity to a paraffined surface.

Description of Methods.

1. Bend a test-tube (as long as possible) about the middle to an angle of 135° or thereabouts. After sterilising it pour in a small amount of melted paraffin, heat it, and keep the tube upright until it is cold. When set the paraffin will form a layer at the bottom of the tube; it is an advantage to let it run along the side of the tube away from which the upper limb is turned (that which is lower when the tube is placed on its side, as in Fig. 3). A tube thus prepared will,

FIG. 3.



of course, keep indefinitely. To use it, fill with blood short of the angle and keep it upright until coagulation has taken place—of course in the incubator. (Fig. 2.) Then put it down on its side, slightly tilted so that the serum may drain down into the angle. With a tube of the ordinary test-tube diameter and containing 8–10 c.c. of blood retraction will usually be complete in two hours or less, and it will be seen that the clot has stuck to the paraffined surface of the tube, whilst it has retracted elsewhere, and has allowed the serum to collect in the angle of the tube. (Fig. 3.)

Workers may like to compare this method with that described by Dr. Gardner in THE LANCET of July 14th. Beside the advantage that the tubes can be kept ready for use, I find it more efficient. Thus in one experiment in which a sample of blood was divided between one of my tubes and one of Dr. Gardner's, and the crop of serum examined after two hours' incubation, I got the following results:—

In the paraffined tube. Total volume of blood, 7·7 c.c. Volume of serum, 3·3 c.c. Amount, 42·9 per cent.

In the agar tube. Total volume of blood, 12·6 c.c. Amount of serum, 3·1 c.c., or 23·8 per cent.

The experiment was a little unfair in that the paraffined tube contained rather less blood, so that a relatively larger crop might have been expected. Retraction in the agar tube is, as Dr. Gardner states, decidedly better than in ordinary tubes.

FIG. 4.

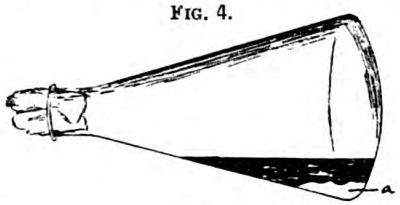
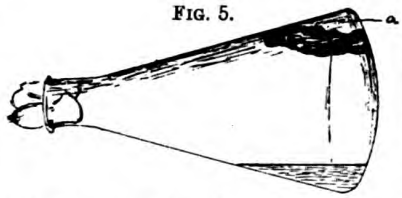


FIG. 5.



2. In case the angled tube is objected to, and only ordinary laboratory apparatus preferred, I have modified the method by paraffining the side of a flask. The blood is allowed to clot in contact with this surface, the flask being kept on its side: the paraffined surface should not be so large that the blood does not touch the glass, or coagulation will be unduly delayed. When this is complete, turn the flask round so that the blood is uppermost. The serum will be very rapidly expressed, and form a pool on the opposite side of the flask. In one experiment the blood took one hour to clot, and gave 42·8 per cent. in another half-hour. (Figs. 4 and 5.)

I have to thank Mr. H. T. Rymer for his kindness in drawing me the illustrations which accompany this article.

GASTRIC ATONY AND WAR NEURASTHENIA.

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I SHOULD like to begin this short paper by an extract from Cannon's article on the Nature of Gastric Peristalsis.[1]

"Tonus as an essential factor of gastric peristalsis is first given by vagus impulses and later maintained by the stomach itself—for (1) severing the vagi before feeding results in inactivity; (2) severing the vagi after digestion is started causes no change in gastric movements or in the rate of discharge. Probably a psychic tonus is developed by the taking of food. The method of maintaining the tonic state ideally as digestion proceeds, and of increasing it as the stomach empties, is not yet determined; it may be the result of a 'contraction remainder' after each rhythmic pulsation.

"The above results account for the functions of the vagi and the splanchnics. They are nerves which increase or decrease the tonus of gastric musculature, and thereby affect peristalsis. The absence of stomach movements, for example, in states of exhaustion can be explained by the failure of vagus impulses, and in emotional states by the presence of splanchnic impulses. Both conditions result in absence of gastric tonus."

It seems to me that this physiological observation may throw some light on a condition which is at present a source of considerable trouble to those who are dealing with war neurasthenics.

Description of Condition.

I have seen in the past two years a large number of soldiers suffering from neurasthenia, either with or without a definite history of shell shock, who, in addition to the physical exhaustion and psychasthenia common in these cases, have suffered definitely from sensations referable to the abdomen, such as aching in the left hypochondrium, pain in the epigastrium, a sensation of constriction in the lower sternal region, and a general feeling of sinking referred not only to the epigastrium but perhaps to the whole abdomen. Many of these show disordered cardiac action, particularly in the direction of intermittent tachycardia, extrasystoles, or persistent rapid action. The systolic blood pressure is usually low, between 110 and 120. Many of them have suffered also from slight but definite pain in the right hypochondrium and right and left iliac regions. They are, for the most part, listless, suffer from loss of appetite, and complain of a feeling of distension after eating, which persists for some hours, and indeed may not pass off before the time for the next meal. Most of them are constipated, and some suffer from alternate constipation and diarrhœa.

All these men have been subjected, apart from definite shell shock, to experiences which are exhausting physically and mentally trying. Vigilance, anxiety, responsibility, and lack of sleep, together with exposure to noise, have all contributed to produce a condition of physical and mental exhaustion combined with severe emotional disturbance. One has to remember in dealing with such patients at the present time that in the case of the bravest man the emotion of fear, or if we choose to call it so, of anxiety, is a contributing factor in the production of any condition of muscular and nervous weakness.

The progress of such cases is in most instances unsatisfactory. They improve after rest in hospital up to a point—that is to say, they get stronger, sleep better, lose their fears, and are able to take an interest in their surroundings and in the general topics of the day. They may even be able to take up serious reading with interest. But the abdominal symptoms remain; although pain may disappear, uneasiness may persist either in the epigastrium or in the right or left hypochondrium, and under excitement or worry the feeling of sinking in the abdomen and the general muscular feebleness are apt to recur.

In the vast majority of such cases, in my experience, auscultatory percussion of the stomach reveals the fact that the upper border of clear percussion is unusually high, associated in many cases, but not invariably, with some spreading to the left of tympanitic percussion. An X ray examination after an opaque meal shows a high air bubble and a stomach slightly more capacious than normally and rather slow to empty. There may or may not be an undue amount of ileo-colic stasis.

[1] Cannon: The Nature of Gastric Peristalsis, Am. Journ. of Physiology. 1911–12, xxix., p. 264, &c.

Treatment.

This condition of gastro-intestinal atony may persist for a long time and is irksome to the patient and physician alike. It does not disappear even after a prolonged rest and careful dieting, or, if it does so, is apt to recur as soon as the patient begins to get about. It is not influenced very greatly by rigid dieting; indeed, a patient seems to do better on an ordinary sensible, mixed fresh food diet, so long as the food *given* does not contain too much indigestible residue, than when he is confined to a diet that is fluid or semi-fluid. In fact, in most cases the patient has a very fair idea of what *he* can eat and what he ought to avoid, but, of course, alcohol and the excessive use of tobacco must be forbidden. In respect of this point there is one caution that must be insisted upon, and that is that in those cases where the abdominal discomfort and pain is practically constant patients are apt, unless encouraged to eat, to avoid food almost entirely, and it has to be explained to them that any kind of food would give them the same amount of discomfort, and that they must eat if strength is to be maintained. This is a difficulty which presents itself in dealing with any kind of gastric neurasthenic.

Cannon's paper throws some light on the causation of their condition and also indicates along what lines treatment should proceed. The experiences of a man, and especially of an officer, during this war are such as to produce just that condition of exhaustion of vagus centres and emotional disturbance which tend to produce atony of the stomach either from failure of vagus impulses or from an excess of splanchnic impulses, with a resulting loss of gastric tone. The difference between the atony produced by emotional states through the splanchnics and that produced by the failure of vagus impulses on account of exhaustion of centres may be of some clinical importance both as regards prognosis and treatment. It is often of considerable difficulty to determine with which class of case one is confronted, and in the absence of any definite laboratory test there remains only the test of the clinical progress of the patient. It is my practice to keep all such cases in bed for a while after they have come under my observation, although they may have been in hospital for a considerable time previously, and treat them by the use of such general sedatives as bromide and belladonna, direct stimulants such as hydrastis, which Major Black has used with good effect in this connexion,[2] and by the manipulative methods and proper spacing of meals as described by Mitchell,[3] Wethered,[4] and McClure.[5] In a number of cases both the neurasthenic and abdominal conditions clear up rapidly under this combination of treatment, and I am inclined to believe that in these cases the gastric fault is largely due to an undue increase of splanchnic impulses, combined, perhaps, with local lesions of the gastro-intestinal mucous membrane, the result of hurried or improper feeding. There may be in such cases a certain amount of vagus failure, but not to any serious extent. Such patients do well, and are speedily advanced to convalescence and successfully returned to duty.

The Two Classes of Cases.

The majority of cases, however, do not recover quickly. The gastric condition improves and relapses, and although after many weeks of careful manipulative treatment, or even general massage, electrical treatment, and encouragement on the part of all in contact with him, the patient may leave the hospital feeling fairly well or even quite well, he tends to relapse at once if he undertakes work involving any great degree of muscular or physical strain.

These are the main differences between the two classes of neurasthenia associated with gastric atony which I have met with in soldiers. In the former class, who recover quickly and apparently completely after suitable treatment, I believe that the gastric atony is due to over-influence of splanchnics. By the use of suitable sedatives and stimulation of the vagus trunk by manipulative treatment over the abdominal areas, first described by Mitchell[3] and confirmed by Wethered[4] and McClure,[5] the proper balance between the vagus and splanchnic impulses to the stomach is restored, and the organ recovers its tone rapidly and completely. In the latter class, whose convalescence is long and too often incomplete, it appears likely that the nervous fault which produces the gastric atony is failure of impulses due to exhaustion of the vagus centres. This belief seems to be confirmed by the results of manipulative treatment in such cases. It appears to be likely that the stimulation of the skin areas over the abdomen induces increased tonus and peristalsis of the stomach through the vagus trunk, and the comparative failure of this line of treatment to produce either a rapid improvement or permanent cure in this latter group is only natural if the atony be due to exhaustion of vagus centres.

Cases Due to Vagus Failure.

Such cases are difficult to handle from the start. Their muscular feebleness, combined with abdominal discomfort, makes them apprehensive and depressed. From the psychological point of view it is no use telling them to buck up and help themselves to get well. A physician in charge can best encourage his patient by explaining from the outset that the illness is likely to be fairly long, improvement must be gradual, and perhaps a little slow, but that the ultimate outlook is good. It is not wise to keep these cases too long in hospital, as they absorb with great ease the hospital atmosphere and develop habits of invalidism. The best way of treating them is to have them rested sufficiently long and treated by all the special methods suitable for their condition, such as manipulative treatment of the abdomen, suitable baths and douches, and various kinds of electrical treatment, including the static. It is necessary to caution those who have such patients under their care that the manipulative treatment of the stomach by the excitation of the cutaneo-gastric reflex, while forming in my opinion an essential part of their treatment, must not be carried on too long at one sitting, as one is apt to tire the patient too much, simple and slight as the manipulation may appear to be.

After the first definite improvement has taken place, and the patient is able to go about, it is usually better in such cases to send him away from hospital for a time, so that he may live quietly in the country and take slight exercise well within his powers. After this period of rest the patient may be brought back again to hospital or may be treated as an out-patient, either in the consulting-room or a clinic, while living in some place other than a hospital, that is, in his own home or some small convalescent hospital where the medical atmosphere is not too obtrusive, and yet where he is still under control.

After a period of out-patient treatment of this kind the patient should again be sent to the country, and the necessity for recalling him as an out-patient depends upon his capacity for taking exercise and developing some hobby.

In addition to the forms of treatment mentioned many cases of this kind respond well to certain organo-therapeutic preparations. Certain polyglandular extracts, extracts prepared from the duodenal mucous membrane, pituitary extract, and small doses of thyroid combined with didymin, have all been found useful in suitable cases. I have come to the conclusion that proper organo-therapy is an essential part in the treatment of cases of vagus failure, and materially helps in the prevention of relapses.

It is well to point out that in a bad breakdown of this type it is useless to expect anything like a reasonable convalescence for many months, and during the whole period of treatment the patient should, as far as possible, be spared any unnecessary worry or excitement. I have known a case that was progressing favourably so upset by unskilful handling at his medical board that a serious relapse was induced. In this particular instance a most enthusiastic young soldier was practically charged with malingering, and the mental effect of this was disastrous. It is well for people to realise that even in war-time and in the case of a soldier a man may be very ill without presenting any very gross lesion on physical examination, and may, indeed, as far as fitness for service goes, be in as bad a condition as the man who has a stiff joint as the result of a bullet wound. It is true that a skilful malingerer may simulate with some success a neurasthenic state, but no one need make the mistake of classing as a malingerer a man who suffers from neurasthenia associated with gastric atony, whether due to the over-influence of splanchnics or the failure of vagus impulses. A little care in the examination of the abdomen in the recumbent position will reveal an upper border of stomach that is abnormally high, and perhaps some spreading of the gastric area of clear percussion to the left, while

[2] Proc. Roy. Soc. Med., January, 1917, Section of Balneology and Climatology, p. 29.

[3] THE LANCET, Jan. 28th, 1911.

[4] Practitioner, December, 1911.

[5] THE LANCET, Sept. 25th, 1915.

an X ray examination in the upright position will show a very high air bubble, and as often as not a definite degree of gastric stasis with some dropping of the stomach.

It is very wise in cases of this kind not to subject the patient too often to examination by a medical board. It is quite sufficient to examine them every three or even six months to begin with, and the time for such an examination, also, should be definitely fixed and the appointment kept by the examiners. I have known cases have a relapse while waiting anxiously for ten days or a fortnight before hearing that their medical board has been fixed. These may be small matters, but the treatment of neurasthenics is successful only by scrupulous attention to small matters, and the physician in charge needs every possible assistance from all those in any way connected with the case, whether in or out of hospital.

Harley-street, W.

DIATHERMY,

FOR THE TREATMENT OF CERTAIN LOCAL ABNORMALITIES OF THE SKIN.

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THERE appears to be among the general public quite a widespread impression that certain affections of the skin, which may be grouped under the title of "blemishes," are such as the medical profession does not deign to treat or considers of so little importance (perhaps merely a question of vanity) that they would not be inclined to give the attention which, in the opinion of the patient, the particular condition deserves. It is true, also, that a large number of practitioners are not aware of the advance in electro-therapeutics which permits of these "blemishes" being removed with an efficiency and accuracy which were not possible a few years ago. Small wonder, therefore, that many such sufferers are attracted by the flaunted advertisements of miraculous cures, whether by local applications, medicines, or at the hands of some unqualified practitioners.

In diathermy we possess a means of dealing with, and in most cases of effectually curing, many conditions of the skin which till recently had been treated in various other ways, often with only partial success.

The conditions referred to are such abnormalities as the different forms of moles and warts, corns, stellate veins, telangiectases, capillary nævi, port-wine marks, xanthelasma, acne, keloid, adenomata, freckles, &c.

The treatment formerly employed in these cases has usually come under one of the following heads: 1. Local applications of a caustic, such as silver nitrate, acetic acid, nitric acid, sulphuric acid, trichloracetic acid, &c. 2. The actual cautery. 3. Ionisation with chlorine, magnesium, zinc, &c., by means of pads soaked in solution of the appropriate salts and applied to the surface. 4. Simple electrolysis. 5. Transfixion with a zinc or copper needle and the passage of the electric current, thereby again employing the caustic ions of zinc or copper. 6. Freezing by means of carbonic acid snow.

Some of the advantages which the method shortly to be described presents over these methods are: (*a*) The rapidity with which the treatment can be carried out. (*b*) The absence of inflammatory reaction. (*c*) The accuracy and limitation which can be secured to definite areas, whether large or small and however irregular. (*d*) The depth to which destruction of tissue is to be carried out can be gauged and regulated. (*e*) Scarring is much reduced in area and less noticeable. (*f*) The treatment is comparatively painless. Even children frequently tolerate it without a murmur.

The Mode of Treatment.

The apparatus necessary consists of one of the various patterns of diathermy apparatus (several very efficient ones are now on the market made by English firms) and a high-frequency couch with handles. The patient is placed on the couch with his hands grasping the handles, and the electrodes from the diathermy apparatus are fastened to the metallic plate at the back of the couch and to the handles respectively. The current is then turned on to give a reading of from 0·25 amp. to 0·50 ampère. By this means the patient becomes part of a charged condenser, of which the cushion of the couch is the dielectric and he and the metallic plate at the back of the couch are the two conducting surfaces. If, then, a metallic instrument be approximated to his skin a discharge of electric current takes place from the skin to the instrument in the form of a spark. For the purpose under consideration a pointed silver probe (uninsulated) answers the purpose very well, but for the sake of adjustment to individual cases it is convenient to have several probes with fine and blunt pointing. An ebonite rod may be held in the left hand to place against the patient as a means of support for the operating hand. If this is not done unpleasant sparking may occur through inadvertently touching the patient.

The instrument is then brought at right-angles to the skin so that the point is almost in contact with the surface to be attacked, when fine sparking is observed to take place. This is allowed to occur for a variable time, measured by seconds, according to the depth and area to be treated, when a yellowish-white, depressed surface remains. Little or no surrounding inflammation occurs and no dressing is required. The destroyed area crumbles away in the course of a few days, leaving in the case of small moles no perceptible scar, and when larger surfaces have been treated a slightly depressed whitish, soft scar.

As an instance of the quickness with which this treatment can be carried out, I not long ago removed 17 moles on the face in less than ten minutes.

The powerful mental effect which, in the case of women particularly, so often accompanies a comparatively slight facial disfigurement is alone a justification of the importance of dealing effectively with many of these abnormalities.

THE RELATION OF THE CASE OF CEREBRO-SPINAL FEVER TO THE POSITIVE CONTACTS.

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ONE of the problems of practical importance in connexion with cerebro-spinal fever is the question whether the case has infected those of his contacts who are subsequently found to be positive, or whether the case has been infected by one of a collection of already positive contacts.

There appear to be two fundamentally different views upon this subject. According to the first, the case is essentially a carrier and is responsible for propagating the disease by spraying cocci from his throat. The positive contacts have derived their infection from the case and may develop the disease. According to the second view the case is not a carrier in the ordinary sense of the word, and is not specially responsible for propagating the disease. The positive contacts, if any, have derived their infection from another carrier, and the case is infected by one or more of these contacts.

The correct elucidation of this problem has a bearing upon cerebro-spinal fever administration in the Navy. The first view would suggest that if, for instance, a case is brought into a general ward before removal to an isolation hospital, not only the original messmates of the case should be swabbed, but also the patients in the ward, *to see if the case has infected anyone.* On the other hand, the second view would not entail the swabbing of the ward, because the object in view is to *find the carrier who infected the case.*

There appears to be no direct method by which this question may be settled, however excellent are the facilities for tracing infection. The positive contacts are only discovered upon the occurrence of a case, and then it cannot be deduced which individual acquired the coccus first. Indirectly, however, important evidence is forthcoming. According to the first view, the case must be a carrier before the onset of the disease. Further, if the case is a carrier it must be common for carriers to develop cerebro-spinal fever.

Our results obtained from a very large material indicate that neither of these consequences is correct.

1. *The presence of meningococci in the throats of cases before the onset of the disease.*—Owing to certain regulations which exist in the Navy it has been possible for us to examine the throats of a number of men who subsequently developed cerebro-spinal fever. On the outbreak of symptoms these men were treated in Haslar Hospital and were then repeatedly examined by us. In the following table the interval of time between the first swab and the onset of symptoms is indicated:—

Case No.	Date of swab before onset.	Result.	Date of onset.	Days' interval.
437	Dec. 1st, 1916	Neg.	Feb. 4th, 1917	65
182	,, 15th	,,	Jan. 3rd	19
705	,, 22nd	,,	March 7th	75
343	,, 23rd	,,	Jan. 13th	21
357	,, 29th	,,	,, 22nd	24
206	,, 31st	,,	,, 4th	4
344	,, 31st	,,	,, 20th	20
414	Jan. 8th, 1917	,,	,, 31st	23
469	,, 26th	,,	Feb. 8th	10
468	,, 31st	,,	,, 8th	8
568	Feb. 1st	,,	,, 19th	18
704	,, 3rd	,,	March 6th	31
536	,, 10th	,,	Feb. 15th	5
567	,, 11th	,,	,, 19th	8
565	,, 11th	,,	,, 19th	8
868	,, 15th	,,	April 11th	70
633	,, 18th	,,	Feb. 22nd	4
696	,, 22nd	,,	March 5th	11
790	,, 25th	,,	,, 7th	10
737	,, 25th	,,	,, 10th	13
809	,, 27th	,,	,, 21st	22
687	March 2nd	,,	,, 4th	2
841	,, 6th, April 4th and 10th	,,	April 18th	43, 14, and 8
706	March 8th	,,	March 12th	4
845	,, 13th and 16th	,,	April 2nd	20 and 17
1028	,, 18th	,,	May 27th	70

It will be observed that in every one of the 26 cases the swab taken before the onset was negative. One of the cases was examined three times and another twice. The swabs were taken at varying times before the onset, some of them very shortly before—namely, one 2 days and three 4 days.

It would, therefore, appear that cases of cerebro-spinal fever are not carriers before the onset of symptoms, or, allowing for an experimental error which cannot be high, cases can seldom be carriers before the onset.

2. *The occurrence of cerebro-spinal fever among carriers.*—It has been stated by Colonel M. H. Gordon "that every case of cerebro-spinal fever is ..... an instance of a carrier developing the disease." In the last section, however, it will be seen that this statement requires modification. In endeavouring to establish the occurrence of the disease among carriers, it is necessary to confine the inquiry to men who have actually been proved to be carriers before the onset of the supposed disease. Captain M. Flack in his report upon the outbreak in London [1] refers to four such cases as occurring among his 185 carriers. From the account given, however, it cannot be said to be certain that all of these men were instances of this phenomenon. We have had a considerably larger number of carriers under observation—namely, 485; all were interned in one camp, and all were proved to be carriers of epidemic types of meningococci. None of these men developed cerebro-spinal fever, and therefore we may conclude that a carrier very rarely develops the disease.

Since, therefore, both foundations for maintaining to the contrary are found to be wrong, we conclude that the case of cerebro-spinal fever is not specially responsible for the spread of the disease and is infected by one of the positive contacts.

We look upon the case as one of the rare individuals who cannot confine the meningococci to the naso-pharynx and merely "carry." Our results also appear to indicate that in such a case the cocci pass very rapidly to the central nervous system after gaining access to the naso-pharynx.

[1] Medical Research Committee. Special Report Series, No. 3, p. 59.

Dr. Fritz de Quervain, professor of surgery in the University of Basle, has succeeded to the chair of surgery at Berne left vacant by the death of Professor Kocher.—Dr. W. R. Hess has been appointed professor of physiology in the University of Zürich and director of the Physiological Institute.—Professor Jaillens has been chosen as successor to the late Professor Combe in the chair of pædiatrics at Lausanne University.

CARDIAC DIGITAL PERCUSSION.

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[*Prefatory Note by* Dr. GORDON.—My colleague, Mr. Bell, has been so good as to associate himself with me in this paper. I cannot over-emphasise the importance of his support. Mr. Bell is well known to be one of the finest violinists in the West of England, and the accuracy of his ear is unquestionable. For my own ear I can make no such claim, but in the technique of digital percussion even an indifferent pianist possesses some advantage.]

Consideration of Three Points.

We desire to direct attention to the following three points. (1) That the "superficial" as distinguished from the "deep" cardiac dullness is at present practically unimportant; (2) that the difference, generally described, between the results of "light" and "heavy" percussion in defining the cardiac dullness is, usually if not always, due to faulty methods of percussion; and (3) that the general failure to recognise the striking changes usually produced in the digital cardiac dullness by change of posture from erect to recumbent, is due to faulty methods of percussion, and is responsible for errors in diagnosis and prognosis which go far to interfere with the progress of cardiology.

1. *"Superficial" and "deep" cardiac dullness.*—We know of no authority on cardiac physical signs who does not lay stress on the distinction between "superficial" and "deep" cardiac dullness. But neither do we know of any who gives an adequate reason for doing so. For at present no practical use is made of the "superficial" dullness. A little reflection will make that evident. Some day some important use may be found for the "superficial" dullness, but at present it only serves to confuse the student, distracting his attention from the "deep" dullness which, with existing knowledge, alone really matters. We feel justified therefore, in what follows, in ignoring the unimportant "superficial" dullness and in speaking of the "deep" cardiac dullness simply as "the cardiac dullness."

2. *"Light" and "heavy" percussion.*—It is commonly said that "light" and "heavy" percussion give constantly quite different results in delimiting the cardiac dullness. Our experience is not in accordance with this. On the contrary, we find that, if a clear note be elicited, "light" and "heavy" percussion yield practically identical results. Obviously either we or those who find differently from us must be defective in hearing or in methods of percussion. As we are approaching the subject with a specially trained ear we do not admit any defect of hearing on our part. With methods of percussion we shall deal immediately.

3. *Posture and cardiac dullness.*—The failure of the profession generally to recognise the change in the cardiac dullness, which is usually produced by change of posture from the erect to the recumbent, is remarkable. But there can be no doubt of this failure. For when the change so caused in the normal dullness was pointed out in 1905 at a meeting of the Royal Medical and Chirurgical Society, it was a new fact and had to be verified [1]; in 1910, when attention was again drawn to it, and especially to the change in the rightward edge of the dullness, both in health and disease,[2] the correctness of the observations was at once called in question; and at the present time cardiac cases are continually being recorded with no statement added of the posture in which percussional measurements are made.

Text-book medical literature is silent on the subject. Obviously, therefore, either our method of percussion or that in general use must be defective. The question is "Which?" We naturally think that our own frequently repeated observations are correct, yet, if they are unverifiable by others, the presumption would be strong that some fallacy underlay them. They have, however, been repeatedly so verified. Further, they have yielded useful results which appear undiscoverable by the methods in fashion. Thus we have found almost constant differences in dullness in differing positions, whose recognition enables us to watch week by week with no fear of fallacy the progress of

cardiac cases under our treatment; where they are not present evident reasons have been found to explain their absence; and the remarkable diminution in the recumbent dullness in cases of cancer[3] has placed within our reach a new aid in diagnosis. All these facts have been already sufficiently enlarged on and illustrated in former papers.[4] We have therefore been emboldened to ask ourselves whether the methods in common use are superior to our own and to arrive at the very definite conclusion that they are not. In fact, we believe that we are enunciating a very important truth in asserting that the methods of digital percussion now in general use are faulty and misleading.

Comparison of Methods.

But, in making this assertion, we have first to define exactly what we mean by digital percussion. Of recent years, the modifications which, naturally enough, have arisen in percussional methods have rather tended to confuse the subject. Obviously we are not dealing with results obtained with pleximeters; equally obviously not with so-called "auscultatory percussion." Nor with so-called "palpatory percussion," which concerns itself, either wholly or in part, with the sense of differing resistance. Our remarks relate solely to the production of sounds by the percussion of finger on finger, at present incomparably the most important form of percussion, because incomparably the commonest. We would recall in passing the admitted fact that the results obtained by it in competent hands coincide remarkably with anatomical findings.

There is nothing new in our method, which differs in no material particular from that which is theoretically approved in text-books. It is this. Moving the right hand loosely from the wrist-joint, we strike with its middle finger, bent, as in piano-playing, to deliver the blow perpendicularly, upon the middle phalanx of the middle finger of the left hand, laid flat, evenly and rather lightly on the chest, parallel to the margin of the dullness to be defined. The note thus obtained, whether loud or faint, according to the force used, is clear.

When comparing the dullness in the erect with that in the recumbent position, in order to avoid possible errors of observation due to differing modes of application of the left hand to the chest, the left hand has been applied in both positions in the same way, with the fingers directed towards the abdomen.

On the other hand, the methods now in common use are by no means such as are theoretically approved in text-books. Comparatively few persons percuss loosely from the wrist or use their fingers as we have described. Two or three fingers are often used together to strike with, they are not bent to strike perpendicularly to the chest wall, and the impact is often more of a push than a blow. The results are what might be expected. The note is not clear and is sometimes scarcely even audible. Such indistinct percussion sounds are quite incapable of defining dullness with precision. Nor is this faultiness of method confined to the careless or to the second-rate. We have sometimes been filled with admiration, whilst listening to the percussion of better men than ourselves, at the acumen which could deduce anything from sounds so inadequate.

And for this the reason seems to us not far to seek. We venture to believe that the teaching of percussion is much below the high level otherwise maintained in medical education. It would appear that percussion is thought too simple an affair for serious trouble to be taken with it. But that is a most unfortunate mistake. A good method of percussion —i.e., one capable of producing a clear, clearly audible note —does not come naturally to anyone except a pianist, and often great pains must be spent upon its acquisition. Let us ask ourselves how often such pains are taken, or how often the need for them is insisted on. Not commonly, we believe And so a most important means of clinical investigation is not commonly acquired.

The history of percussion itself illustrates the difficulty the profession has always found with it. Auenbrugger, of Vienna, published his discovery of digital percussion in 1761. Yet little came of it for nearly half a century. Then in 1808 Corvisart, Napoleon I.'s physician, lighted on Auenbrugger's work and republished it in French with commentaries of his own. Even then, according to Sahli,[5] it did not become the common property of physicians until the second half of the nineteenth century. Something like a hundred years for the profession to acquaint itself with one of the most valuable clinical methods we possess!

In conclusion, we hope that the points we have raised will receive indulgent examination. For if we are right—and there is at least a reasonable case for our contentions—diagnosis and prognosis in heart disease are now commonly rendered defective to a serious degree, and, if this be so, it needs no tedious arguments to show that the progress of cardiology is thereby seriously interfered with.

References.—1. The Influence of Posture on the Normal Cardiac Sounds and on the Normal Cardiac Dullness, Med. Chir. Trans., vol. lxxxix., 1906. 2. The Rightward Edge of Cardiac Dullness, Brit. Med. Jour., June 4th, 1910. 3. The Cardiac Dullness in Cases of Cancer, Med. Chir. Trans., vol. lxxxvii., 1904; Diminished Cardiac Dullness in Cancer, Brit. Med. Jour., August 8th, 1908; Further Experience of the Cardiac Sign in Cancer, ibid., May 31st, 1913; The Value of the Cardiac Sign in Cancer, THE LANCET, Jan. 17th, 1914; The Value of the Cardiac Sign in the Diagnosis of Gastric Cancer, Practitioner, April, 1914; On Digital Percussion and the Cardiac Sign in Cancer, Bristol Med. Chir. Journ., March, 1914. 4. Besides the above, Bodily Posture and Cardiac Physical Signs, THE LANCET, August 10th, 1907. 5. Sahli: Diagnostic Methods, Potter's translation, p. 199.

NERVOUS CRETINISM.

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Major R. McCarrison, I.M.S., in his lectures on goitre published several years ago,[1] declared that he has observed, in Gilgit, and other places where cretinism is endemic, certain cases in which some *indicia* of cretinism are associated with nervous disorder of the nature of spastic diplegia. He referred to these cases as "nervous cretinism," and described them as being often longheaded deaf-mutes, typically exhibiting a knock-kneed spasticity of the legs, with a stiff, bobbing gait, and exaggerated knee-jerks. He stated also that the upper limbs are frequently spastic, with the thumb tucked into the palm, whilst the toes are often flexed on the sole. The face was spoken of as "cretinoid," coarse nystagmus was mentioned as frequent, and variable squint as not uncommon.

A picture was drawn, in fine, of a kind of idiocy, associated not with the physical characters of the orthodox cretin but with "cerebral" spastic diplegia of the types so common at our out-patient departments and in our large institutions; and a definite relationship was established, on various grounds, including that of therapeutic result, between these cases, and the commonly recognised cases of endemic dysthyreosis known as "cretins." At the same time the existence of *minor degrees of "nervous cretinism"* was clearly indicated.

Demonstration of Cases in England.

Little notice, unfortunately, was taken of this portion of Major McCarrison's lectures, but Dr. (Major) Frederick Langmead, in 1913, demonstrated what he suggested to be a case of "nervous cretinism"[2] which was somewhat freely criticised, in that the child did not appear to be a cretin in the ordinary sense of the word—one of the chief points made by McCarrison himself!

Such criticisms were, however, not substantial; and there is no doubt, I think, that Dr. Langmead did indeed show a case of dysthyreosis of the type called "nervous cretinism" by Major McCarrison. It at once called to my mind a private patient of my own, a little girl, whose mother suffered from a mild degree of exophthalmic goitre, and who was brought to me because, to use the mother's own words, "she always stood on her toes and pointed them in a funny way." There was, indeed, a tonic and persistent spasm of the calf muscles and the child walked badly. She was cutting her last milk teeth, and I thought she looked hypothyroidal. I ordered her some thyroid gland substance for that reason and, on seeing her again some weeks later, found that the gait was much improved and that the spasm had disappeared.

At the time that Dr. Langmead showed his case I was attached to the Belgrave Hospital and was able, in the course of a few months, to find several cases (corresponding to McCarrison's description of the milder types) which improved on thyroid feeding. One of these was shown at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine.[3] My predecessor, Dr Hildred Carlill, had seen the child some months earlier,

before, indeed, the onset of the nervous symptoms, and had marked the case-sheet "? hypothyroidal." When I saw her there were spasm and weakness of the legs, and the "*cretinoid*" manifestations were as slight as they usually are in these cases. But the spasm and diplegia disappeared completely under thyroid feeding and the child began again to talk freely. She had latterly been relatively mute.

I therefore express the opinion that, just as McCarrison has established the existence in places where cretinism is endemic of a spastic diplegia of varying degree, relieved, at any rate, when not of long standing, by thyroid treatment, so also in England are sporadic cases of similar nature to be met with *if looked for*. In nearly every case of this nature that I have seen there has been definite evidence of dysthyreosis in the mother or in one or more other children of the same family

A Form of Thyroiditis in Brazil.

Reference must now be made to the work of Chagas, who is the discoverer, in Brazil, of a peculiar "epi-endemic" variety of thyroiditis associated with a trypanosome infection, and who insists that a proportion of the individuals attacked by this trypanosome (*T. cruzi*) and, developing the specific thyroiditis, come to suffer from a kind of "Little's disease" or "cerebral diplegia," whereof the signs and symptoms vary from slight spasticity, with increase of knee-jerks and tottering gait, to absolute idiocy and gross spastic diplegia.[4]

I do not know that Chagas has treated any of his cases with preparations of thyroid gland, and I gather that he is inclined to attribute the amentia and spastic palsy to cerebral changes wrought by the trypanosome rather than to any consequence of the thyroiditis itself; but the fact remains that he, independently of McCarrison, has established the clinical co-existence of dysthyreosis and spastic diplegia.

And, moreover, one must recall that which has been written or is known concerning the relation between the thyroid, the parathyroids, and tetany, making particular reference to the valuable paper by Paton and Findlay, and to the letter by Dr. Forsyth in response thereto, that have recently appeared in the *British Medical Journal*.[5 6]

Bearing in mind, too, the association of lenticular degeneration with a form of hepatic disease, it is foolish to assert, as I have heard it asserted, on *a priori* grounds, that the cerebral changes of Chagas's long-standing cases can have no relation to thyroidal or parathyroidal insufficiency, and equally unwise hastily to discredit the suggestion that there is a definite spastic diplegia to be met with in England, associated with dysthyreosis and relieved by thyroid feeding.

Later Observations: Description of Condition.

Since returning from France early this year, after an absence of more than two years, that has broken all links with the 10 or 12 cases I had under observation in 1914, I have come across ten or a dozen more, of which eight are at present under treatment, and definitely and steadily improving, and I venture, therefore, provisionally to summarise some present conclusions in dogmatic form:—

The nervous symptoms that are associated in the child with atypical athyreosis are to be recognised as forming degrees of the state described by McCarrison as "nervous cretinism."

"Nervous cretinism" occurs in England, possibly endemically, but certainly, if not "sporadically," at any rate without obvious endemic associations.

In almost every case that I have seen which appears to deserve the appellation of "nervous cretinism," there has been evidence of dysthyreosis in the mother or other members of her family.

The earliest manifestations of *mild* "nervous cretinism" are generally regarded as "tetany," and occur towards the end of the second year of life (or a little later), when the child has well learnt to walk and talk.

There is sometimes seen about this time a pale puffiness or oedematousness that represents the myxœdematous phase of dysthyreosis; it is usually only transient, and there is some reason also to think that the nervous symptoms themselves are not necessarily progressive even when untreated, but may tend towards regression.

Following the "tetany"—or stage of remittent spasm—there may ensue a stage of weakness, with tottering gait, and a more persistent spasm that passes into a condition not to be distinguished from "congenital spastic diplegia" or "Little's disease" of moderate degree.

In the more severe cases mental defect is obvious almost from very early days, and the early appearance of spasm with nystagmus leads to the confident diagnosis of congenital spastic diplegia.

The relation of these cases to the group of "mild" nervous cretinism is shown by the familial dysthyreosis and by the at least partial response to thyroid medication: sometimes by familial incidence. The mild cases whose nervous symptoms first attract notice towards the end of the second year or thereabouts are not "cretins" in the ordinary sense of the term and frequently, in the beginning, docile and pleasing children. They are sometimes, however, broad-headed and their "hypothyroidal" quality may be manifest in the arrangement of their forehead hair and eyebrows, and in the waxen puffiness of their skin.

Whilst there is no reason at all to suppose that more than a certain proportion of cases of "congenital spastic diplegia" are really cases of "nervous cretinism" it should be remembered that: (*a*) The results of the post-mortem investigations on these cases are oddly puzzling, anomalous, and inconsistent;[7] (*b*) in many cases of congenital spastic diplegia there is *no* history of prolonged, difficult, or instrumental labour; (*c*) oftentimes the mother definitely asserts that the child had "nothing wrong till two or later," and once walked well; (*d*) *familial* congenital spastic diplegia is described.

No claim is made for the "cure" of established cases of "Little's disease" or congenital spastic palsy by thyroid tablets; but certain cases of young children, diagnosed by specially competent physicians as "congenital spastic diplegia with amentia," have definitely responded to treatment by thyroid; whilst cases of "tetany," "spasm," "weak legs," and so forth, recognised as corresponding to McCarrison's milder cases of nervous cretinism, have become quite cured whilst taking the same substance. The effects, on similar cases, of parathyroid medication, I have not yet noted.

References.—1. McCarrison, Major, I.M.S.: THE LANCET, 1908, ii., 1278. 2. Langmead, Fredk.: Proc. Roy. Soc. Med., 1913; Section for the Study of Disease in Children; March 28th. 3. Crookshank, F. G.: Ibid., Nov. 28th. 4. Chagas: Nouvelle Iconographie de la Salpêtrière, 1913, xxvi., 1. 5. Paton and Findlay: Brit. Med. Jour., 1917, i., 575. 6. Forsyth: Ibid., 1917, i., 632. 7. Garrod, Batten, and Thursfield: Diseases of Children.

Harley-street, W.

A NOTE ON THE OCCURRENCE OF "BLUE PUS" IN SEPTIC WOUNDS.

BY THOMAS H. KELLOCK, M.C. CAMB., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C. (T.);
AND
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CAPTAIN, R.A.M.C. (T.).

THE appearance of "blue pus" in an open wound has long been recognised as a complication that may occur during the healing process and has generally been regarded as an ill omen, and dealt with by the application of antiseptics, such as carbolic acid, with a view to its destruction; the results of this were generally quite successful, the blue colour and peculiar odour disappearing almost at once from the wound.

In the many septic wounds with which we have had to deal recently it has struck us as peculiar in what a relatively large number of them the *Bacillus pyocyaneus* has appeared; it makes its appearance suddenly, in wounds both recent and old, generally in one that has rather a large open surface, pays but a short visit, and vanishes as rapidly as it appears.

Sometimes in opening the dressing of a wound which has apparently been running a normal course the characteristic odour is at once noticeable, and one finds the wound, dressings and surrounding skin all covered with blue pus; the same dressing may be continued and in one, two, or three days all blue colour and odour may have disappeared and the wound apparently returned to its former condition. Meanwhile the patient's general condition shows no change, the temperature is not altered, pain is neither more nor less, and in spite of the great disturbance that must have occurred among the microbic inhabitants of the wound owing to the extraordinarily rapid increase of *B. pyocyaneus*, the short visitation would seem to have brought about no change. It has, however, been our experience that wounds in which this

occurs almost invariably do well afterwards; there may be no change for a day or two, but then an improvement takes place, the granulating surfaces become more healthy and vigorous, and healing follows quickly. Why this should be is not very apparent; it may be that the very rapid growth of *B. pyocyaneus* merely ousts or actually destroys the septic organisms that were present in the wound, or it may be that the bacillus is present from the beginning, and only increases with such vigour when the other organisms are weakening and have lost some of their vitality, so that the wound is already beginning to mend, and thus the spread of *B. pyocyaneus* may have no share in bringing about an improvement; in the latter case one would have expected the growth of *B. pyocyaneus* to continue instead of disappearing again rapidly as it generally does.

It has thus come about that we have learnt to regard the appearance of blue pus in a septic wound as a favourable sign rather than the contrary, fully expecting that in due course improvement will come, and this has been so sure that a trial has been made to see what good would come of infecting sluggish or unhealthy-looking wounds with *Bacillus pyocyaneus*. It proved to be rather difficult to get the infection to take; at first the wounds were merely touched with an emulsion of living organisms, and subsequently other more vigorous methods were employed, such as packing a wound with infected gauze, scratching the surface of the wound before infecting it and inserting on to a wound a living culture with the medium. The results were variable; in many absolutely nothing occurred, but in some infection took place, and in these a marked subsequent improvement occurred in the condition of the wounds; on no occasion did any harm come to the wound or to the patient. Here, again, the question will naturally arise, Did the infection destroy or oust other organisms and so do good, or was it that only in those wounds that were on the point of improving naturally could infection be obtained?

An interesting point noticed lately has been that the antiseptic flavine appears to have no effect on the *Bacillus pyocyaneus;* at any rate, in open wounds where septic organisms are also present the two seem quite compatible, to the great advantage of the wound.

From a bacteriological point of view this clinical observation is of interest, for the antagonism of *Bacillus pyocyaneus* to certain other bacteria has been shown by its power to impede the growth of the bacillus of anthrax in cultures and by the injection into an animal susceptible to anthrax of a mixture of the bacilli of blue pus and of anthrax, the latter disease then failing to develop. Porcelain-filtered cultures of *B. pyocyaneus* are said to have similar properties. Kitasato found that *B. pyocyaneus* prevented the development of the vibrio of Asiatic cholera, and Rumpf claimed similar antagonism to *Bacillus typhosus*, but experiments designed to repeat the latter's observation show that the subject appears to be rendered more than usually susceptible to the action of enteric and of colon bacillus. The ferment pyocyanase has been used for the removal of diphtheritic membrane and in the treatment of nasal catarrhs.

Bacillus pyocyaneus shows considerable morphological variation and its chromogenic powers seem equally inconstant. For example, from one of the wounds described above cultures infected on the first day of the sudden appearance of blue pus in the dressings showed *B. pyocyaneus*, which produced abundant brilliant pigment, and by the rapidity of its growth rendered isolation of accompanying organisms difficult, while on the next day the wound and dressings without alteration in treatment presented neither the characteristic colour nor odour, and cultures on the same media showed *B. pyocyaneus* in markedly reduced numbers, growing feebly, and only after three days producing pigment, even that being of the brownish variety, the bluish colour being absent throughout.

Although usually harmless and sometimes apparently beneficial to a wound, *B. pyocyaneus* must always be regarded as at least a possible source of danger, as it can (though rarely) be recovered from the blood stream in certain terminal conditions, and has been described as the primary cause of a few cases of otitis and of enteritis.

Experiments *in vitro* suggest that *B. pyocyaneus* has little, if any, power to impede the growth of *Streptococcus pyogenes* and *Staphylococcus aureus*, though possibly its products in the complex media presented by a wound may be of a different and deterrent nature.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF STRANGULATED FEMORAL HERNIA.

BY THOMAS E. COULSON, M.D. EDIN., F.R.C.S. EDIN.,
SURGEON TO THE MERTHYR GUEST HOSPITAL, TEMPLECOMBE, AND TO THE WINCANTON AND GILLINGHAM V.A.D. HOSPITALS.

THE following case of strangulated femoral hernia presents some unusual features.

Mrs. A., a strong, healthy-looking woman, aged 50, whose only previous illness was perimastoid suppuration four years ago, gave a history of her present illness as follows. During the last five or six months she had been suffering from occasional severe attacks of pain in the right iliac region. The pain was so severe that it "doubled her up," and if it came on when she was out for a walk it was with difficulty she reached home. It usually made her sick, kept her in bed for a day or so, and then passed off, leaving her little the worse except for a bad taste in the mouth and a distaste for food for some days. She was constipated, as a rule, both before and after an attack. She had never noticed any swelling in the groin during any of this time.

On June 1st, 1916, an exceptionally severe attack developed, but passed off as usual next day. On June 12th, 1916, she went to bed as usual, but was wakened in the night by a severe pain in the right groin and was sick. The pain continued to increase and spread over the whole abdomen. It was still present next morning and was getting worse, being now especially severe round and above the umbilicus. She was sick again about midday (June 13th) and sent for me.

When I saw the patient about 2 P.M. she was in bed, had an anxious drawn expression, and had just vomited about a quarter of a pint of green stomach contents. She complained of pain in the abdomen, coming on in paroxysms, especially in the right groin and just above the umbilicus. The bowels had been opened that morning. The temperature was 97° F. and pulse 68 per minute. The tongue was furred and inclined to be dry down the centre. The abdomen was slightly distended and tympanitic, but was flaccid on palpation. There was no special area of tenderness, but in the right groin was a firm, hard lump about the size of a Tangerine orange, dull on percussion, and with no impulse on coughing. I diagnosed a strangulated femoral hernia and advised immediate operation for its relief. She was accordingly admitted to the Merthyr Guest Hospital, Templecombe, and I operated at 3 P.M. that afternoon.

Operation.—After the usual shaving and painting the skin with chloroformum iodi, an incision was made vertically and to the inner side of the lump about three inches long. The hernial sac was thin and, on being opened, was found to contain, besides about one ounce of clear fluid, the cæcum and appendix. The cæcum was nearly black in colour but shiny in appearance. The appendix was swollen to twice its normal size, was black in colour and dull and lustreless in appearance. There were also some tough adhesions between the base of the appendix and the peritoneum forming the neck of the sac. There was no doubt in my mind that the appendix would not recover if returned to the abdomen; I therefore decided to remove it. I first of all cut the adhesions between two ligatures, and, after tying the meso-appendix, removed the appendix and invaginated the stump in the cæcum by means of a purse-string suture. I then made two small incisions in Gimbernat's ligament, returned the cæcum to the abdomen, ligatured the sac as high up as possible, and cut it off below the ligature. Making no attempt at a radical cure, as the condition of the patient would not admit of this, I sutured the skin with salmon gut and returned the patient to bed.

The wound healed by first intention, recovery was uninterrupted, and she has been free from all pain in the abdomen since the operation, which was performed a year ago.

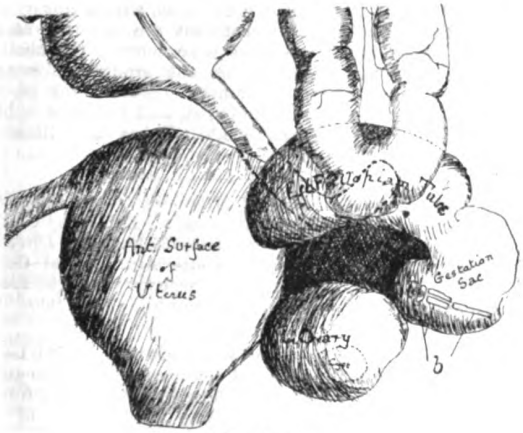
The interest of this case lies in the fact that the patient had before strangulation probably suffered from, at least, three attacks of appendicitis of a mild nature but sufficiently severe to cause the formation of adhesions between the appendix and parietal peritoneum. Another point of interest and importance is the fact that when the cæcum and appendix became strangulated in the hernia it was the appendix which suffered the more severely, evidenced by

the fact that the appendix was dull and lustreless whilst the cæcum was shiny in appearance; this is possibly accounted for by the fact that the appendicular artery anastomoses with the vessels in the cæcum to a very limited extent,[1] so that in the event of it becoming obstructed, gangrene of the appendix is very prone to supervene with great rapidity.

CASE OF EXTRA-UTERINE GESTATION.

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Patient, aged 31, was admitted to the London Temperance Hospital on Oct. 10th, 1916, under the care of Dr. Kevin Byrne; she had had abdominal pain for 12 months. She was married in August, 1914. Confined on Nov. 4th, 1915, of her first child at seven months (died in 15 hours). Six weeks later had her first monthly period, which was a heavy one and lasted one week. One month after this there was a very scanty loss every few days up to February, 1916, when a "piece of shaggy flesh" was passed (no blood with it). Then *total cessation* of menses until August, after which periods became regular and normal in amount. Patient had had abdominal pain since her confinement, but in February last she had "labour-like pains," and considered herself pregnant. Sent into an infirmary, where she remained from March to July. Here she was curetted "for a miscarriage." The pains continued, and patient felt weak.



b, Fœtal bones.

On admission to the London Temperance Hospital on Oct. 10th a large swelling was in right side of pelvis and pouch of Douglas. No vaginal discharge. Uterus slightly larger than normal and pushed over to the left. Nov. 8th: Note by Dr. Byrne. "The swelling on right side is smaller but still tender. There is a swelling, not previously observed, in corresponding region to left of uterus. She has complained of rather more pain in lower abdomen and extending from right side to left." Nov. 12th: Menstruating. Nov. 16th: Pain in lower abdomen, especially right side, much worse to-day. Pain on superficial palpation; relieved on *deep* palpation. No rigidity. Nov. 24th: Operation by Mr. J. McClure.

On opening abdomen the omentum, vermiform appendix, and a loop of ileum were found adherent to the fundus of the uterus on the left side. On freeing these (in doing which a small part of serous coat of gut was torn and had to be stitched up) a hard mass was found at the left tubo-uterine junction. This turned out to be the left greatly dilated tube and ovary, on the surface of which were some fœtal bones (as in figure, *b*)—viz., a femur, tibia, and fibula, also metatarsals of both feet. Close to the former and parallel to them were some nodules thought to be the spine, with cranium at lower pole. Parts removed were both Fallopian tubes, left ovary, gestation sac, and vermiform appendix. Patient made an uninterrupted recovery.

I am indebted to Dr. Byrne and Mr. McClure for permission to report this case.

[1] A Treatise on Applied Anatomy, by E. H. Taylor, p. 485.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—R. H. O. B. Robinson, King's College, Cambridge, has been awarded the University Scholarship of £50.

Reviews and Notices of Books.

1. *The Causes of Tuberculosis.* By LOUIS COBBETT, M.D. Camb., F.R.C.S. Eng., University Lecturer in Pathology, Cambridge. Cambridge: The University Press. 1917. Pp. 707. Price 21*s.* net.
2. *Clinical Tuberculosis.* By FRANCIS MARION POTTENGER, A.M., M.D., LL.D. With a chapter on Laboratory Methods by JOSEPH ELBERT POTTENGER, A.B., M.D. In two volumes. London and Glasgow: Henry Kimpton. 1917. Pp. 1416.

1. THIS book on the Causes of Tuberculosis is primarily a digest of the work of the late Royal Commission on Tuberculosis, of the reported activities of the Local Government Board, of the Health Department of the City of New York, and of the Imperial Board of Health of Berlin. It is also a good deal more, for the author, who has personally contributed much spade-work to researches on tuberculosis, has gone considerably further afield in collecting valuable material. He has also brought out his facts so skilfully that the validity of most of his conclusions will be questioned by few. His is the ambitious object of providing a book at once for the medical profession and the lay public. Undoubtedly it will prove useful to both, and as a basis for lectures both to students and the public it should be invaluable. The earlier chapters deal with the incidence of tuberculosis and the wonderful decline in the mortality from this cause during the last half century. On the basis of the calculation that "the ratio of deaths to population has fallen by more than 50 per cent." in this period, the author anticipates that "tuberculosis will have become a rare disease before the end of the century." One of his most interesting conclusions is that in the case of both human and bovine tuberculosis "..... in the main it is the large doses of bacilli which are dangerous, and that small ones are often harmless or even beneficial by increasing resistance." His recommendations for combating both these forms of tuberculosis reflect this view. The author is in favour of segregation, but he thinks that compulsion with this object must, except in very exceptional cases, be renounced. He is, as a rule, so careful to weigh available evidence before attempting to formulate his conclusions that it is surprising to find him digressing from his main thesis to pass judgment on the achievements of sanatoriums without adequately reviewing the arguments for and against them. They "take," he says, "away with one hand what they give with the other." This attitude is surprising in a "segregationalist," as the provision of ample sanatorium accommodation automatically helps to solve the problem of segregation in the least objectionable manner. To recommend segregation without a full discussion of all it implies is dangerous in a book partly intended for non-medical readers. The book, as an exposition of present-day knowledge of the causes of tuberculosis, merits unreserved praise.

2. Progress in our knowledge of tuberculosis is, along certain lines, so rapid that the sight of these bulky volumes at once suggests the mournful reflection that in a few years they may be out of date. But on closer scrutiny these regrets prove superfluous, for this work is not just a compilation of others' researches brought up to date. It represents rather the experience and thoughts of one man—the author. His is a record of observations made during 20 years of clinical study conducted mainly at the Pottenger Sanatorium, California, and the reader will be struck by the originality of thought and the consistency of effort directed along certain specialised lines. And yet the author shows a catholic knowledge of other aspects of his subject. In the chapter on modes of infection the author says he has not had a single case of direct infection of employees and attendants in sanatoriums brought to his attention. He sees in "massive" infection of children the chief danger which, if avoided, would greatly limit active tuberculosis in the adult. Further, he believes that recognition of the significance of early lymphatic tuberculosis would supply "the key to the tuberculous problem." He notes that tuberculin in childhood may often be the determining factor for good between the years 5 to 10 or 12. In a later chapter he says of tuberculin that, after 20 years' experience, he

believes that, properly administered, it "will add at least a minimum of 20 per cent. to the chances of healing." But he is evidently no blind tuberculin fanatic, and he insists on its uselessness except in the hands of the expert prepared to individualise and to avoid all routine or haphazard methods. A distinctive feature of the chapters on diagnosis is the almost meticulous study of symptoms, of which, even in the early stages, about 30 are described. By careful analysis these symptoms are placed in three groups according to their etiology, which may be toxæmic, reflex, or local (the tuberculous process *per se*). Nervous instability belongs, for example, to the first group, cough to the second, and hæmoptysis to the third. The author then tries to show how toxæmia can produce nervous instability and reflex action produce cough. His main clue to these problems is sought in the nervous system, and he is indefatigable in following up the paths of reflex action. As he says:—

In tuberculosis we must conceive of a condition in which both the vagus and the sympathetic systems are simultaneously stimulated, but one in which either one or the other usually yields with a resultant disturbed equilibrium.

This, for example, is how he analyses the rapid pulse of tuberculosis (p. 231):—

It has long been said that a persistently rapid pulse in tuberculosis means a bad prognosis. While this is not invariably true, there is some ground for it, because it means that the patient's sympathetic tonus is in the ascendancy. ..... It would be more rational to state that those patients who are distinctly of the sympathetic tonus type, or those people who have a decreased vagus tonus, which means practically the same thing, are not as able to withstand the disease as those who have increased vagus tonus.

The author attaches great importance to the mental factor in tuberculosis, and he sees in the possession of magnetism, "Geist," personality by the physician an almost essential qualification. Thus (p. 651):—

I would rather have a patient treated in a room, if I could give him the benefit of hydrotherapy and psychotherapy, with good food, than treat him in the open air, with hydrotherapy and psychotherapy omitted.

We have dwelt rather on the unusual than on the more commonplace features of this book, so let us add that it also represents, broadly speaking, the views of the ablest pathologists and physicians of the day on the various aspects of tuberculosis. The author has a trick of iteration. The points he would emphasise and establish as pivots about which lesser factors revolve recur again and again. They constitute refrains running throughout his work. It would be easy enough for him greatly to condense what he has to say, but it would be at the loss of a fluent easy rhythm which conveys a vast store of knowledge. The book offers no points of comparison with the average text-book and forms a comprehensive survey of its subject.

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1. *Les Psychonévroses de Guerre.* By G. ROUSSY, Professeur agrégé à la Faculté de Médecine de Paris; and JEAN LHERMITTE, Ancien Chef de Laboratoire à la Faculté de Médecine de Paris. With 13 plates. Paris: Masson et Cie. 1917. Pp. 187. Price 4 francs.
2. *Hystérie-Pithiatisme et Troubles Nerveux d'Ordre Réflexe.* By J. BABINSKI, Membre de l'Académie de Médecine; and J. FROMENT, Professeur agrégé, Médecin des Hôpitaux de Lyon. With 37 figures and 8 plates. 1917. Pp. 267. Same publishers and price.

1. THIS useful little volume is one of the latest additions to the series of war monographs published by the well-known house of Masson. The authors include under the term psychoneurosis every variety of functional disturbance from the simplest to the most complex, from those whose expression is almost entirely physical to those where psychical symptoms predominate. Thus they comprise in their précis impairment of gait, involuntary movements of all sorts, sensory phenomena, disturbances of the special senses, visceral troubles, anxiety-hysteria, and the various mental symptoms of head injuries, shell shock cases, and the other pathological states with which the war has made us familiar. A chapter is devoted to commotio cerebralis. The etiology of these different neuropathic and psychopathic conditions is outlined in some detail, and several sections are taken up with an attempt to guide the reader to a clear understanding of the part played by "simulation-exaggeration" and "simulation-prolongation." The chapters on treatment are particularly good. The rôle of the physician, and of the patient, the environment, and the exact procedures desirable receive full consideration. The authors believe in reasoned and persuasive psychotherapy after the manner of Dejerine, Dubois, and Babinski. They hold that suggestion under hypnotism should be abandoned altogether. In their hands the methods here specified have been successful in from 98 to 99 per cent. of cases.

2. In view of the therapeutic importance of clearly distinguishing hysterical from other functional disorders of the central nervous system arising in the course of warfare a practical knowledge of their differential diagnosis is essential. We do not know any modern volume in which the reader will find these difficult subjects so lucidly explained as in this, not merely because one of the best working hypotheses of hysteria is associated with the name of M. Babinski, but also because of the learned way in which the peculiarities of the condition known as reflex paralysis, often confused with hysteria, are here presented for consideration. Reflex paralysis is a subject to which much attention has been given, yet in England the profession as a whole can scarcely be said to be familiar with it; since, however, it appears to occupy a place intermediate between the organic and the functional, its importance is considerable. No doubt in this excellent little book the authors are more concerned with an exposition of their own views than with an examination of the views of others, but its obvious merits should commend it to all who are in search of a compendium of information on war hysteria and allied conditions, where questions of diagnosis, prognosis, and treatment are handled at some length. There is, at the same time, more in the book than its appeal to the physician on the ground of practical usefulness; its appendices contain observations of much scientific interest for the neurologist, and there is a bibliography of some 250 references. There are illustrative photographs and diagrams.

Microbiology: A Text-book of Micro-organisms, General and Applied. By Various Contributors. Edited by CHARLES E. MARSHALL, Professor of Microbiology and Director of Graduate School, Massachusetts Agricultural College. Second edition, revised and enlarged. With 186 illustrations. London: J. and A. Churchill. Pp. 900. Price 12*s.* 6*d.* net.

IN a review of the first edition of this book in THE LANCET of April 27th, 1912, the special features which distinguished the work were noted at some length. It differed from the ordinary text-book in that it was a collection of short monographs by specialists and not the product of a single author. There was, however, less overlapping and greater uniformity of treatment than might have been anticipated. Further, the book was not apparently directed to the needs of any special group of readers, but furnished part of a general liberal education. Its descriptive title was "Microbiology for Agricultural and Domestic Science Students," and "domestic science" was interpreted so as to include the diseases of men and animals, plant diseases, sanitation, and, in fact, any subject in which micro-organisms played a part. The articles were not, however, of a popular character, but were a series of able, if necessarily limited, monographs. All laboratory methods were eliminated. The qualifying expressions of the original title have now been dropped, and the book is described as an elementary technical treatise on the subjects included under the term microbiology, but there is no essential change in this second edition either in method or scope. There has been a general revision of the work, and certain additions have been made which have increased the size of the book by some 300 pages, while the illustrations are also more numerous. The cytology of micro-organisms has become more defined in recent years and has received additional attention in the present edition at the hands of Dr. Guilliermond, professor of botany at Lyons. A chapter has also been added on intestinal microbiology. The space devoted to the microbial diseases of insects has been increased, and especial attention is paid to those diseases which are of economic importance, such as that caused by *B acridiorum* in locusts and those which affect bees.

The book certainly gives a good general view of a very wide field of knowledge. The size of the book still remains moderate, and no fault can be found with the type and general appearance.

Cerebellar Abscess; its Etiology, Pathology, Diagnosis, and Treatment, including Anatomy and Physiology of the Cerebellum. By ISIDORE FRIESNER, M.D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital, New York, &c., and ALFRED BRAUN, M.D., F.A.C.S., Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital, New York, &c. With 10 full-page plates and 16 illustrations in text. London: William Heinemann. 1917. Pp. 186. Price 12*s.* 6*d.* net.

THE authors have compiled a useful monograph on cerebellar abscess in all its bearings. The sections on the anatomy and physiology of the cerebellum contain a résumé of the most recent work on the subject, of German origin, be it remarked, for while Lewandowsky, Rothmann, and Bárány are quoted from freely there is little apparent appreciation of the investigations of Horsley and R. H. Clarke, and the valuable researches of André Thomas and Durupt on cerebellar localisation are ignored. Further, in the sections on symptomatology Bárány's tests are described in full, but there is no reference to the methods of Babinski, which are in some ways preferable. It is curious, too, that while investigations associated with the names of German workers are usually quoted from the original sources, methods of examination for which we are entirely indebted to the French and English schools of neurology, are freely described without any acknowledgment of their origin. The apparently one-sided nature of the writers' knowledge of cerebellar research is regrettable.

From the clinical standpoint the common cerebellar symptoms are, on the whole, fairly presented to the reader, though we notice a differentiation is drawn between the "character" and the "behaviour" of nystagmus which is far from clear. Further, we are of the opinion that a greater acquaintance with cerebellar disease other than abscess might have led the authors to modify certain of their statements. Tremor is mentioned, but its localising significance is not stated; deviation of the head in certain cases is referred to, but not described in the specific way in which it usually occurs. Cerebellar gait is not noted except in the briefest fashion; dysmetria, asynergy, and adiadokokinesis are described separately without any hint of their interrelation. The chapters on the prognosis and treatment of cerebellar abscess are, on the other hand, more complete and satisfactory.

The Treatment of Tabetic Ataxia by Means of Systematic Exercise. By Dr. H. S. FRENKEL, Medical Superintendent of the Sanatorium "Freihof" in Heiden (Switzerland). Second revised and enlarged English edition by L. FREYBERGER, J.P., M.D. Vienna, M.R.C.P. Lond., Barrister-at-Law of the Middle Temple, &c. With 129 illustrations. London: William Heinemann. 1917. Pp. 209. Price 12*s.* 6*d.* net.

Dr. Frenkel's exercises for the treatment of the ataxia of tabes dorsalis have become justly famous, and their abiding value in the tackling of a troublesome symptom has been demonstrated over and over again in the experience of physicians of all countries. Their rationale can be readily grasped when we remember the words of Hughlings Jackson, that when the dorsal columns of the cord are sclerosed the tabetic walks badly "with what of his cord is left." Hence the importance of endeavouring to educate, rather than to re-educate, the muscle groups by a new combination of the eye and what remains of the cutaneous and deep sensory apparatus. In this new edition there is full appreciation of the fact that the cause which keeps up the sclerosing process in the central nervous system must be obviated as far as possible by specific treatment, and in the last chapter modern methods are described with some detail. It is not the purpose of the book, however, to go into this question completely. But, given a tabetic in an early stage or, for that matter, in a chronic stage, his ataxia, other things being equal, will certainly be influenced favourably by patient treatment along the lines here described with ingenious care. We have said that Frenkel's exercises are familiar to the physician; he should become a possessor of this handbook to realise how much the method can effect and how applicable it is to all forms of impaired control over the muscular system.

JOURNALS.

Military Surgeon (Washington, D.C., U.S.A.).—The September number of this journal contains several articles of value on war surgery. Dr. E. B. Downer, Red Cross surgeon in Serbia and director of a private mission to Russia, reports excellent results from bone-grafting in the treatment of ununited fractures. The surgeon who takes up this branch should be first a skilled mechanic and next requires motor-driven tools. Dr. Downer declares he himself has the only motor-driven outfit in Russia. Bone splints lead to bone formation, but steel plates prevent it. The author's observations on surgical methods in each of the successive years of the war are judicious and should be read.—Lieutenant-Colonel W. L. Keller, Medical Corps, U.S. Army, sends a valuable paper on Surgical Work in a United States Army Hospital. Amongst other things he describes a novel and successful treatment for bubo and for phagedænic ulcer. The Report of the Mesopotamia Commission is reviewed. It is regretted that the Commission included no medical member, and it is noted that, under those circumstances, it was unlikely the medical department would escape censure. It is observed that the preservation of the health of an army, and the efficient removal of its wounded have so much influence on the success or failure of every military undertaking that "so long as the medical department has no representation on the General Staff, there never can be any team-play in an army."—Colonel Goodwin, A.M.S., in an address to the United States War College, states as having held the post of A.D.M.S. of two divisions in France, that when he has heard staff officers declare a particular A.D.M.S. "difficult to manage," he has considered that a great compliment had been paid to the administrative medical service. He observes that the higher the discipline of a unit the more efficiently is its sanitation carried out, and that sanitarily the best conducted troops are the Guards. He further notes that to avoid "a medical breakdown" after an action, the A.D.M.S. must secure information in advance from the headquarters staff. For he is always working with a rope round his neck, and when the medical breakdown comes, as come it will, it is he who will be "hanged," so he had better get this delaying of information removed before the breakdown it is rendering inevitable occurs.—The same issue of the journal contains an interesting account by Lieutenant-Colonel E. L. Munson of an outbreak of measles, occurring in a military camp in Texas, in which the author lays stress on the respiratory symptoms.

Archives de Médecine Navale.—In the issues of this journal for June and July Dr. René Potel, médecin de 1re classe of the French Navy, gives an account of an epidemic of typhus fever amongst Serbian soldiers and the Frenchmen who associated with them in February and March, 1916. On Feb. 1st 2400 Serbian soldiers, who had escaped from Serbia after many hardships, were embarked at Corfu in the French transport *France IV.* for Tunis. There was neither time nor opportunity to clean them before embarkation, nor even to give them clothing, and they came on board in their rags. On Feb 12th cases of typhus began to appear among the French sick-berth staff; in all, 14 of the ship's company were attacked. These men were on arrival sent to the naval hospital at Bizerta, where they, being few, were completely cleaned and no further cases occurred. The 486 Serbian cases were sent to Sidi-Abdallah, near by, where emergency hospitals had been prepared for them, but as they arrived in scores and hundreds little could be at once done beyond washing them and putting them into clean clothes; they were not like the others shaved and so freed from nits, and 21 days after their arrival cases of typhus began to appear amongst the medical officers and the orderlies. This period of 21 days was occupied, it is suggested, three days of it in the hatching of the nits and the development of the parasites therefrom, eight days in the maturation of the cause of the infection within these young parasites, and ten days in the incubation of the fever in the bitten human patient. Ten days after there had been time to work over all the patients, to get them shaved completely, and their bedding disinfected, no more cases occurred. The cases amongst the Serbians were numerous but mild; those amongst the French few but severe. Dr. Potel observes that the sanitary measures employed were directed against lice only, and that they brought the epidemic to an end. Whence he concludes that

it is by lice and by lice only that the fever was spread. The measures taken became more rigid as time went on. At first men were allowed to keep their purses and tobacco-pouches, but later they had to leave all their possessions behind. As to diagnosis, Dr. Potel notes that this is at first difficult, as there is so much resemblance to enteric. The temperature, however, is high and steady without the marked morning remission of typhoid fever; beside the cutaneous rash there is a blue punctate rash on the congested soft palate, there are headache, wakefulness, abolition of the superficial reflexes, and a hebetude which may by persistent provocation be changed to irritation. During convalescence, it may be said, the pre-existence of typhus is shown by exaggeration of the deep and loss of the superficial reflexes, great wasting, poor sleep, and nocturnal pains in the legs. In doubtful cases the injection of 40 minims of the patient's blood, intraperitoneally, into a guinea-pig will produce in ten days the characteristic symptoms. Dr. Potel was very fortunate in being able to get an antityphus serum from Dr. Nicolle—apparently (it is not definitely stated) the non-centrifuged serum of an ass carefully immunised.[1] Of 3 cases without serum 2 died; of 31 treated by serum, cases equally grave, all but 1 recovered. The devoted work of the French medical staff who suffered so heavily in their splendid work for the refugee Serbian soldiers is made clear in the report, from which it also appears that if the embarkation at Corfu had been definitely delayed and spread over two days, while the Serbians were in turn being washed and shaved and embarked, and having their clothes boiled, this epidemic would have been much lighter. We learn that a medical officer stood out against receiving the Serbians till these things were done, and if he had had his way his orderlies would have been saved from disease, and his country from much unnecessary expense.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

TOILET LANOLINE (WELLCOME BRAND).

(BURROUGHS, WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

THE curious characteristic of dry wool fat of readily emulsifying into a uniform cream with water renders it a valuable skin application. Hydrous lanoline is thus easily absorbed by the skin, rendering it supple and smooth without leaving a greasy impression. The sample submitted to us contained, according to our analysis, exactly 30 per cent. of water, while it was entirely free from mineral matter. On heating, the creamy mass melted and the water and wool fat separated, and after a time a clear yellow oil remained. It is pointed out that while this preparation is primarily intended for toilet use it is also suitable for application in many skin conditions, particularly as the wool fat employed is highly refined. It is delicately perfumed.

JARDOX.

(JARDOX LIMITED, CRYSTAL PALACE WORKS, ANERLEY, LONDON, S.E. 20.)

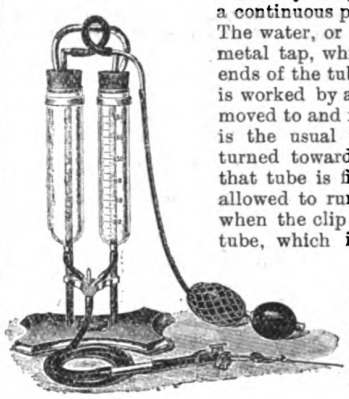
Jardox is a viscid meat expression which, in addition to the ordinary extractives and bases of meat, contains a notable proportion of finely divided fibrin, as well as coagulable albumins. On analysis the following results were obtained: Moisture, 35·00 per cent.; total meat derivatives, 55·30 per cent.; mineral matter, 9·70 per cent. The meat derivatives were made up of 50 per cent. extractives and bases, and 5·30 per cent. of fibrin and albumin. The presence also of a notable proportion of proteoses was confirmed, inasmuch as a material yield was obtained on the addition of saturated ammonium sulphate solution. The mineral matter was chiefly salt and potassium phosphate. The flavour is agreeably "beefy" and not too rich. Besides its stimulating properties, this preparation provides a definite food value due to proteoses, fibrin, and albumin, which renders it useful for invalid purposes and also for general use as an emergency restorative.

[1] THE LANCET, 1916, i., 1187.

New Inventions.

A ONE-MAN "606" APPARATUS.

THIS apparatus is easily portable, easily taken to pieces for sterilisation, easily rearranged, and all the parts can be replaced; and it is safe. There are two vertical glass tubes connected above by corks to an ordinary spray bellows, which by frequent compression give a continuous positive pressure within. The water, or "606," runs through a metal tap, which is connected to the ends of the tubes by rubber; the tap is worked by a handle, which can be moved to and fro at will—beyond this is the usual tube. The handle is turned towards the water-side, and that tube is filled up and the water allowed to run until it is free of air when the clip is closed. The "606" tube, which is divided into 30 c.c. and subdivided into 10 c.c., is then filled with one or more doses, the corks firmly put in, and the air pressure fully raised, and, the corks holding, the operation can be started. Directly the vein is entered the water runs down the glass and the handle can be then switched on to the "606" and the measured quantity allowed to run in. The "606" is then turned off, and it is washed in by the water till the colour disappears in the window. On the first occasion I gave 22 injections, and I have always found it to work well, and since then I have given 41 in an hour. The left hand must always be on the needle and the right hand free to move the handle, &c.



The apparatus, called the Simplex "606" Infusion Set, is manufactured by A. Day, 8, Albemarle-street, Clerkenwell, E.C. 1, and is obtainable from all surgical houses.

JAMES S. ROBERTSON,
House Surgeon, London Lock Hospital.

A MODIFIED ANCHOR TOURNIQUET.

IN the ordinary pattern of Samway tourniquet, though the anchor catch gives a satisfactory hold, it is not easy to fix the instrument at the required tension, nor can it be rapidly detached. These shortcomings are due to the lack of any part of the apparatus upon which a firm purchase can be obtained. To provide this I have had a handle added in rigid continuity with the anchor. The form is sufficiently shown by the illustration. It will be found that a tourniquet fitted with this modified anchor can be readily applied at any tension and can be rapidly detached, even when out of sight. The pattern shown has been made for me by Messrs. Allen and Hanburys, Wigmore-street, W.



C. MAX PAGE, M.B., M.S. Lond.,
Captain, R.A.M.C. (S.R.).

PRESENTATION TO A MEDICAL MAN.—Mr. F. C. Fitzgerald, who has been dispensary medical officer of the Newtownbutler district of co. Fermanagh for the past 40 years, has been presented by his patients with an illuminated address and a cheque for £350, his wife receiving a gold watch.

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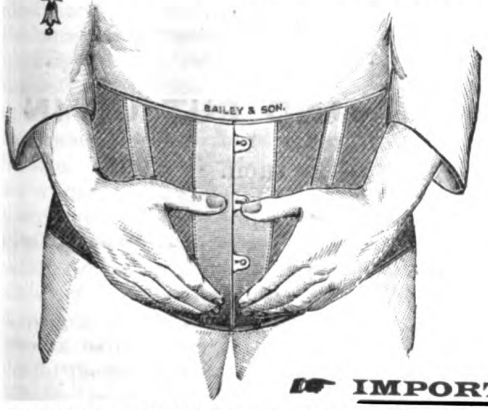
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THE LANCET.

LONDON: SATURDAY, OCTOBER 20, 1917.

Success and Failure in the Treatment of Tuberculosis.

GLOOM has fallen on the treatment of tuberculosis, at all events in the public mind. The keen hopes raised by the open-air methods introduced from Nordrach, by the Edinburgh dispensary scheme, and by the Frimley graduated exercises have died down. During the years when these pioneer methods were being worked out the death-rate from tuberculosis was falling steadily from year to year, and although critics were not wanting to point out that this fall in death-rate was nothing more than a continuation of the steady fall already in progress during the last half century, and even possibly the diminution of this rate, yet the feeling was widespread that a new and hopeful era in the treatment of tuberculosis had been introduced. How different is the position now. Sanatorium treatment is regarded by many as having failed in its promise and succeeded merely in interposing an interval of improvement in the inevitable course of a fatal disease. The death-rate from pulmonary tuberculosis has risen during the last three years in a way which no thoughtful person can overlook. The figures from headquarters are given in another column by Sir ARTHUR NEWSHOLME, who adds an instructive table of the rate for the last three years in comparison with the favourable year 1913. Both 1915 and 1916 show a 12 per cent. increase on 1913 in the death-rate from pulmonary tuberculosis, and it must be remembered that in a slow disease like tuberculosis the death-rate is rather a clue to conditions prevailing in previous years. The discouragement extends to all the schemes set in motion on the recommendation of the Departmental Committee on Tuberculosis in 1912; in spite of a vast amount of trouble and administrative machinery we have not kept pace with the disease. The tendency is a natural one to regard the whole of this machinery as useless and to wish it scrapped for something better. The contrast is so vivid between apparent administrative failure in regard to tuberculosis and the dramatic success achieved in stamping out enteric fever by means of prophylactic measures, that increasing pressure is being brought to bear on authorities to treat tuberculosis as a contagious disease and the sufferer from tuberculosis as a social pariah to be isolated from his fellows.

It may not, therefore, be out of place, even at the risk of wearying the well informed, to return once more to the essential difference between the course of tuberculosis and that of strictly limited acute infections. As the late W. R. HUGGARD acutely observed, the c
the observations of NÄ
tuberculosis in hospital
never been challenged. Q
have been confirmed from
institute in Switzerland by
found in a series of 360 c
only 13 bodies which did not
previous infection with tuberc
that 96 per cent. of the ordinary
tion of Berne, a bleak but not
have had tuberculosis, and of these
progressive lesions at the time of
while 64 per cent. had healed foci
merely of calcified scar tissue. Dr.
cautions his readers that the result of
material must not be applied to the gene
mankind without due consideration, and th
post-mortem material of the war will alone
conclusive evidence of the extent of tubercu
tion; but his conclusion is unassailable th
tuberculosis is acquired and recovered from withou
treatment by a vast majority of civilised people.
This stamps it at once as a social disease which
cannot intelligently be dealt with on the lines of
acute epidemic disorders. The Departmental
Committee, recognising this, set in movement a
vast social organisation to deal with tuberculosis,
and the question which must be asked is whether
this herculean labour has shown any commensurate
results. The answer is emphatically that neither
material for proof or disproof is yet available. Sir
ARTHUR NEWSHOLME tells us that in 1911 there were
1300 beds available for the institutional treatment
of tuberculosis and about 25–30 tuberculosis dispensaries in action. During the two years following
many local authorities were persuaded to establish
tuberculosis schemes. Then came the war, which
put a stop at once to the realisation of any schemes
recently initiated and prevented the full working
out of those already in action. But the war did
more than this. It brought with it precisely those
factors known to have a harmful influence on
tuberculosis. Obviously the restriction of food
supply, which has had such a terrible influence in
Belgium and the districts of France in German
occupation, has not been a widely felt influence
in this country, but the results of mental stress
and physical strain have been the same, although
in less measure. With regard to the fighters
themselves, it was contended with some show
of probability that the free open-air life of the
trenches, with abundant food and exercise, might
exert a favourable influence on the course of tuberculosis acquired in town life. In the full light
of his official knowledge Sir ARTHUR NEWSHOLME
says No. A few consumptives have been able to
withstand the strain of active warfare, the majority
unfortunately have broken down, and he adds that
the records already show a material national
increase in tuberculosis due to the war.

The position, then, is this. Tuberculosis is being
given a new start while the measures for its control

[1] Anatomische Untersuchungen über die Häufigkeit der Tuberkulose (from the Pathological Institute at Berne). Corresp. f. Schw. Aerzte, Sept. 8th, 1917.

handicapped. And yet another factor tells in favour of the disease on which insufficient emphasis has yet been laid—viz., the restriction on ventilation imposed by the Home Office lighting regulations. More than 12 months ago Dr. S. DAVIES, of Woolwich, attributed the increased incidence of tuberculosis and other respiratory diseases in Woolwich to this cause. The habit of the fresh-air life, an essential part of the tuberculosis campaign which was just beginning to take hold of the nation as a whole, has received an incalculable setback by the insistence on closely screening windows. But there is in all this no cause for depression. The mechanism of tuberculosis control is good and only requires to be properly applied. The work of the tuberculosis dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines. Sir ARTHUR NEWSHOLME is most helpful when he points out the defects of these efforts and their appropriate remedies. On the side of the patient the harm comes from delay in applying for treatment until the disease is fully established and his unwillingness even then to accept sanatorium treatment: neglect and concealment are still potent factors. On the side of the practitioner is the difficulty nowadays of devoting the time necessary for early diagnosis, and a certain unwillingness to refer doubtful cases for consultation to the tuberculosis officer. Against the work of the tuberculosis officer is the insufficient staff available for the new service, and the number of experienced assistants is now reduced almost to a vanishing quantity by the war. No serious progress can be made without close coöperation between these three essential links in the chain of administrative control—the patient, his doctor, and the tuberculosis officer. In certain places where the coöperation has been complete the success of dispensary treatment has been such that undue emphasis has been laid on such minor adjuvants as the administration of certain remedies. With the return to normal conditions after the war, with the more complete training of the tuberculosis officer, and greater coöperation with the general practitioner, the administrative control of tuberculosis will come into its own.

The Problem of the Insane Sailor and Soldier.

OF the various after-the-war problems already beginning to attract public and professional attention that of the future of Service men who have become insane or otherwise mentally afflicted is not one of the least important. It may be taken for granted, in general terms, that the Government and the country desire that all who have broken down while wearing the King's uniform should be treated justly and even generously. For there is a feeling that in dealing with those who have suffered most, and who are unable to do anything further for themselves, any error that is made should be on the side of generosity. To those acquainted with the handling of the nervous and mental wreckage of warfare on land or sea the inadequacy of the accommodation at present provided has long been noticeable. Certain institutions admitting mental cases from a command of wide limits have been more or less crowded out. Nor are the numbers of such cases likely to diminish for some time yet. Further, a large number, the approximate percentage of which it is at present impossible to gauge, will pass into the category of the chronic or the incurable.

From a letter which we publish in another column it will be gathered that the official suggestions accepted by the Board of Control, for the disposal of such cases are already meeting with criticism. It will be seen that the Government propose to provide the required accommodation in the ordinary civilian pauper asylums, with an allowance of 3*s*. 9*d*. above the pauper maintenance rate. A mild attempt at further distinction from the pauper insane is to be effected by resort to the term "Service patients"; and by a recent order every military case is regarded as a private patient, to be paid for by the Ministry of Pensions until his status has been determined. We do not know whether in such institutions the "Service patients" are to be kept in separate blocks or not, although we cannot suppose, as Dr. J. F. GEMMEL seems to hint, that they may not be segregated even from the criminal insane. One of the objections to such suggested treatment is undoubtedly associated with the fact that in the lay mind there is a stigma attached to insanity and asylums. The persistence with which this keeps cropping up is such that it cannot be dismissed airily from consideration, absurd though it may be and is. The public have not yet learned that mental disease is nervous disease, or that mental symptoms may be the outcome of pathological processes in the brain whose occurrence elsewhere, say in the liver, would never be regarded with distress or spoken of with bated breath. It is a commonplace of practice that the average family will do anything to avoid the certification of the insane relative; and Dr. GEMMEL appears to welcome the possibility of saving the "Service patient" from "at least documentary evidence of insanity," though he would, of course, admit this can make no difference to the medical facts of the case. While, however, the public is not yet educated to regard insanity through the spectacles of the physician, the question of avoiding certification as far as practicable is not to be ignored, especially as the sentimental side of the matter also demands consideration. By this we mean that there is something repellent in the idea that some of the men who have fought for us should as a consequence spend the rest of their lives in a lunatic asylum. Elaborate schemes are on foot to provide homes and blocks of residences for disabled Service men where they may spend their days by themselves in comparative comfort; hundreds, of another class, will be adequately cared for in such places as the new Star and Garter home: yet the only difference between these men and the unfortunate traumatic insane is, it may be

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said with reason, that the latter has been shot in the head and the former has been shot in some other part. Is this a sufficient justification for making their futures so different? We scarcely think so. We are bound to give due weight to the sentimental aspect of the problem, though not at the expense of abandoning our professional view that any measures calculated to enlighten public opinion on the unreality of the insane stigma should be patiently emphasised.

Another point arising out of the discussion must not be ignored, especially as we have reason to believe the Board of Control may be in possession of facts not accessible to the lay public. It is impossible in many cases to tell an epileptic patient by merely looking at him, nor will a routine medical examination necessarily reveal the truth. Such men may therefore be accepted in good faith by the authorities, but before they have been in the Navy or Army a week they may develop fits and be transferred to a Service hospital. They have been of no value whatever from a naval or military point of view, and the appearance of epileptic degeneracy may not be far distant, yet meanwhile separation allowances and the usual privileges are granted. It is possible that in some cases medical officers may have been deliberately deceived for the sake of the monetary advantages. Similarly, in the lucid intervals of certain forms of recurrent insanity men may have been accepted, though only by reason of denial on the part of the recruit or his relatives of the facts of the case. Again, certain forms of mental disease, in an early stage, may have been missed by the medical officer for one reason or another. Technically, these patients have become sailors or soldiers, but they have passed through no "extraordinary vicissitudes" to develop their disease; quite the contrary. They have been accepted, but only as the result of the suppression of material data, and we are not inclined to regard any attempt at discrimination between such and the genuinely traumatic insane as sophistry or refinement. There is, at the least, another side to the proposal that all insane Service men should be taken as "Service patients" irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. We feel it is only fair to the genuine cases that that form of sharp practice which pushes the frankly unfit into the Army for ulterior motives should be exposed, where technical acceptance is due to the holding back of material facts and where the patient's actual service with the colours is numbered by days or even hours. We cannot see that any particular hardship would arise were these cases to be dealt with in the usual routine way of civilian practice. However, we cordially agree with Dr. GEMMEL that only good can come by clearly envisaging these various aspects of a most important question, which calls for immediate discussion with a view to practical measures of an acceptable kind, and in regard to which further pronouncement on the part of the Government will be welcome.

Anno.

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THE WAR EMERGENCY FU MEDICAL BENEVOL

THE aims of the War Emer Royal Medical Benevolent Fun cisely defined at their conferenc members of the medical profession we have already noted, the chairma as a civilian fund to be managed by c and with the principal object of assi laying down their medical commissions tate themselves in practice. Including of the recent appeal, a sum of £7000 i hand, but the immediate objective is a su less than £25,000, with a probability of findi this insufficient if only 3 to 4 per cent. of the m men holding commissions prove to need It cannot be too strongly emphasised that the Emergency Fund begins where other funds lea off and that no question of competition or ove lapping arises. Proof of this, if proof were necessary, is afforded by the fact that the heads of the Medical Services of both Navy and Army accompanied their regrets for absence at the conference with good wishes for the success of the Fund. Important details of administration rather than questions of principle occupied the main attention of the meeting. Several of those present urged that the Fund should be administered as a loan to be repaid at leisure, and this view gained acceptance in the form: "Take this to start you on your legs again; you can return it whenever you like, with or without interest as you please." Decentralisation for the collection of funds was a second point which met with general approval, a speaker stating that a personal appeal through an enthusiastic local leader, however unknown in wider circles, would attain a better response in any district than circulars from headquarters. The value of the help of Local Medical War Committees in making recommendations arising out of their local knowledge was recognised, while keeping steadily in view the necessity for absolute secrecy. The plan for ensuring this secrecy is the investigation of the case of any applicant by a single officer of the Fund, who places the name on a register accessible only to the executive, the application being dealt with in future as a number only. As on previous occasions, the conference wished it to be made abundantly clear that no question of charity must arise in accepting help from the Fund. Of the 12,000 or more medical men who have received commissions some have undoubtedly improved their financial position, while others, for the most part young men in process of building up practices, have suffered to a serious extent. The War Emergency Fund may well be regarded as a pool from which to equalise the war sacrifice made by the medical profession as a whole in so far as money can redeem the loss. The Fund appeals, in the first instance, to the more prosperous in our own profession, and then to a larger public which recognises its obligation to medical science and skill during the war. Such, in brief, was the message of the meeting, and while the Executive Committee of the Fund remains the same for the time being, a large General Committee of supporters was elected to uphold them in their work.

LOCAL ARGYRIA DUE TO ORGANIC SILVER COMPOUNDS.

THE generalised argyria following the prolonged administration of silver nitrate is well known, and is the local argyria which follows its local use and also occurs in silver-workers. But the local argyria due to the local use of argyrol and other organic silver compounds is a recent observation. In the *Journal of the American Medical Association* Dr. G. M. Olson has reported the following case:—

A woman came under observation in November, 1916. Four years previously she sustained fracture of the nose with laceration of the soft parts extending to the right lower eyelid. Argyrol was dropped into the eye, and made its way into the lacerated tissue of the lid, nose, and cheek. An unsightly bluish-green and slate-grey pigmentation resulted, for which the oculists were consulted. Bichloride of mercury injections were given and, according to the patient, effected a slight improvement. For two years the condition had been stationary. Dr. Olson prescribed hexamine, 5 grains thrice daily. The condition improved at once, and in two weeks half the area of pigmentation had disappeared. The dose was increased to 10 grains and the improvement continued, but was not so marked. After six weeks the drug proved irritating to the stomach and kidneys and was discontinued. About three-fourths of the pigmentation had disappeared.

The hexamine treatment was discovered by an American practitioner, A. M. Crispin, who published in 1914 a case of universal argyria due to collargol. He gave the patient hexamine for a cold and was astonished to find that the pigmentation became several degrees lighter. Another American, Davidson, reported in 1916 a case of general argyria due to urethral injections of argyrol and protargol. The pigmentation following the application of the organic silver compounds comes on very slowly, but when subcutaneous injections are made the cutis and subcutis are stained at once, and if the skin is thin, as in the eyelids, a bluish-green discolouration immediately becomes apparent. The danger of argyria is not great, provided certain precautions are taken. Intact epidermis and mucous membranes do not take up the silver stain unless solutions are used steadily for a long time. But raw surfaces, such as ulcer of the cornea and burns, from which epithelium is absent, readily take up the stain. In chronic inflammation the epithelium of the mucous membranes also takes up the stain more readily. There is special danger in forcibly injecting the lacrymal duct, urethra, and similar places, as the solution may be forced into the loose connective tissue. Solutions should never be used near lacerated wounds, and patients should not be allowed to use them unsupervised for long periods. The prognosis of general argyria due to internal administration of silver nitrate, in which there is a large amount of silver in the tissues, is almost hopeless. But in local argyria, due to organic silver compounds, the amount of silver present is small, and in some patients the pigmentation disappears spontaneously. Even in occupational argyria, due to metallic silver, the pigmentation occasionally fades spontaneously. Treatment has not proved of much service; the principal remedy has been potassium or sodium iodide given by the mouth. Dr. Olson considers that the hexamine treatment is promising, but so far it has been tried in only two cases. He suggests that it acts by forming a soluble compound with the pigment which is absorbed and probably excreted by the kidneys. Under the treatment the stain should diminish in two weeks. But as it fades slowly the treatment should be continued for months, with intervals, so as to avoid irritation of the stomach and kidneys.

ROYAL SOCIETY OF MEDICINE.

THE Royal Society of Medicine has just issued the calendar for 1917–18, which contains much interesting information on the origin, progress, and work of the society, with a complete list of officers, members of Council, sections, and dates of meetings. With Sir Rickman Godlee as President (the Past-President being Sir Frederick Taylor), the Council has the following list of Vice-Presidents who are also Presidents of sections: Mr. G. Rowell (Anæsthetics), Dr. Preston King (Balneology and Climatology), Dr. H. Morley Fletcher (Diseases in Children), Dr. H. D. Rolleston (Clinical), Dr. J. Galloway (Dermatology), Dr. G. Harrison Orton (Electro-Therapeutics), Dr. G. S. Buchanan (Epidemiology), Dr. Raymond Crawfurd (History of Medicine), Dr. A. Brown Kelly (Laryngology), Dr. A. E. Garrod, F.R.S. (Medicine), Dr. R. P. Smith (Neurology), Dr. G. F. Blacker (Obstetrics and Gynæcology), Mr. J. H. Badcock (Odontology), Mr. W. Lang (Ophthalmology), Dr. H. J. Banks Davis (Otology), Dr. W. Bulloch, F.R.S. (Pathology), Dr. R. P. Smith (Psychiatry), Sir Anthony A. Bowlby (Surgery), and Dr. W. Hale White (Therapeutics and Pharmacology). Dr. W. Pasteur and Mr. H. S. Pendlebury are the honorary treasurers, Dr. Norman Moore and Mr. W. G. Spencer the honorary librarians, and Mr. C. H. Fagge and Dr. J. C. Briscoe the honorary secretaries. The secretary, consulting librarian, and editor of the society's proceedings is Mr. J. Y. W. MacAlister, into whose energetic dispensation of business no sign of this multiple pressure of work has intruded.

OUR DAILY SUGAR.

A SERIES of questions and answers published recently in the *Local Government Chronicle* not only illustrate the difficulties which will beset some members of the public in obtaining their authorised portion of sugar in the coming year but serve to remind us also that the work of the Government department responsible for the nation's first experiment in compulsory rationing has been, and will be, no sinecure. The questions are, of course, those propounded by readers of the periodical containing them, and a considerable portion of them relate to persons who change their residence frequently, in some cases at every week-end, by "going home" or by leaving their homes for change of air. Arrangements, it is stated, are being made for those who thus remove from one registered household to another and for others who, having no fixed address, cater for themselves and are constantly travelling. They will have to form a code of a comprehensive and ingenious character if they combine to satisfy the requirements of the chronic week-ender, of the bachelor and spinster entering the bonds of matrimony after registration, of a mobile anti-aircraft unit, and of "a person who has no fixed abode and lives first with one friend and then with another," all of whom are anxious to know what the future may hold in store for them. We can conceive the last-mentioned nomad being made comparatively welcome in the hospitable circle in which he moves if he were to promise before arriving at each temporary abode that he would contribute his ration to the family stock for general cooking purposes, and abstain from drinking it in tea, coffee, and other beverages. This is a form of economy in sugar which hardly seems to be enough

impressed upon the public by their many advisers in the newspapers and elsewhere. And yet a large *number* of persons by choice drink no sugar in their tea, and some, perhaps fewer, omit it from coffee also. Many, too, have voluntarily forgone it as a form of "war economy," and we have not yet heard that either class believes that it has *suffered* in health thereby, as many believe that they have done through eating "war bread." The temporary shortage of tea with which we appear to be threatened will cause far more inconvenience to all than voluntary abstinence from sugar in it, but may have an indirect advantage through compelling an economy in the latter which many housekeepers will welcome. In respect of sugar, however, and of tea alike, we urge upon all cheerful acquiescence in deprivations which are temporary only and are inevitable. Our population suffer in a country which flourished and grew strong long before either tea or sugar was in general use, and which only in a very recent period of its existence has adopted the former as a national beverage.

EPIDEMIC POLIOMYELITIS.

THE central facts in the bacteriology of poliomyelitis have not seriously been called in question, though the claims of certain streptococci to be regarded as the specific cause of the disease have been urged with some insistence by several investigators. These streptococci are frequently found in the central nervous tissues in cases of the disease as seen in man or as artificially produced in monkeys. Recent work seems to show that these organisms must be regarded as secondary infections, since they are unable to produce the lesions of poliomyelitis or to protect against infection by the filtrable virus of that disease, nor do they differ from streptococci isolated from cases of sepsis. Interesting researches on the delicacy of the relation which exists between infection and alterations in the meninges and choroid plexus have been recorded by Flexner and Amoss. The slight alteration which is caused by lumbar puncture and the injection of such physiological fluids as monkey or horse serum, isotonic salt solution, Ringer's and Locke's solutions, promotes infection with the virus of poliomyelitis which has been introduced into the blood or subcutaneous tissues, or swabbed on the nasal mucous membrane. Even so minute a disturbance as the substitution of the cerebro-spinal fluid of one monkey for that of another may, in some instances, promote infection, as does also simple lumbar puncture if attended with the slightest hæmorrhage. The same observers found that the intrathecal injection of normal horse serum in protected monkeys caused the passage of protective substances from the blood of the injected animal into the cerebro-spinal fluid. There are still many lacunæ in our knowledge of the spread of epidemic poliomyelitis, but some light is thrown upon the irregularities by the discovery that a material is present in the nasal and pharyngeal mucosa of man which can inactivate or neutralise the active virus, and that this power is not found in all cases or at all times in the same individual. The poliomyelitic virus has been shown by Flexner to survive in glycerol for at least six years. Though much work has been done on the part played by insects in the epidemiology of the disease the evidence as to their importance is still of the slightest.

NUTRITIVE VALUE OF BU

AN important point in com parative dietetic values of bu stitutes is raised in an interes subject appearing in the Septemb *Journal of Physiology* by W. D. J. C. Drummond. For the purposes gation the butter substitutes were c into three classes as follows: (1 margarines (the higher-priced marg vegetable-oil margarines (the cheaper margarine); and (3) nut butter, a product forming a comparatively insi fraction of the butter substitutes consu this country, and which the authors st prepared exclusively for the use of vegeta and consequently has a limited sale. The exp ments were made on rats, but the belief expressed that the results have a direct bearin upon the dietary of the growing child. This belie is, of course, well founded, since experiments on rats have been fruitful in indicating particularly the importance of the presence of accessory growth substances in the dietary. As the net result of their investigations the authors conclude that (1) the fat-soluble accessory growth substance (vitamine) is present in beef-fat and "oleo-oil," and is present in margarines prepared upon such a basis. Such margarines, the authors consider, are nutritively the equivalent of butter. (2) Coconut oil, cotton-seed oil, arachis oil, and hydrogenated vegetable oils contain little or none of this accessory substance, and hence margarines prepared with a basis of these fats have not an equal nutritive value to that of butter. (3) Nut butters prepared from crushed nuts and vegetable fats are similarly not equal to butter; while (4) lard substitutes prepared from vegetable oils are equal to lard in their nutritive value, but both alike are destitute of the fat-soluble accessory substance. In a well-balanced diet the deficiencies pointed out may not be a serious matter, as so many articles of food carry accessory substances, and so a compensation is obtained. Curiously enough, this compensation is found in the present war bread, as was pointed out in our columns last week. Thus, while the Government regulation bread contains less starch than wheat flour, it is decidedly richer in every other constituent, and particularly in regard to accessory growth substances and phosphorus. The importance of a balanced diet is again emphasised in an admirable pamphlet on "Food and How to Save It," by Dr. Edmund I. Spriggs, published last week by His Majesty's Stationery Office. This consists of a series of articles already issued by the Ministry of Food, which are written in such simple terms as to afford a valuable and instructive guide to the general public. The fact, however, that some of the fats available to the public are deficient in certain essentials should be carefully considered, as doubtless amongst the poor the fat dietary is largely based on cheap vegetable oils. As Professor Halliburton and his co-worker, Mr. J. C. Drummond, point out, it would be truer economy even for the poor to purchase smaller quantities of an oleo-oil margarine if they cannot afford the luxury of real butter. But we should like to ask, Are vitamines so difficult to prepare as to exclude the practicability of adding them to accessory-free fats, so making up for the deficiency? This question might well receive the careful attention of our food authorities as well as the manufacturers of inactive butter substitutes.

ICTEROGENETIC SPIROCHÆTOSIS.

Professor Umberto Carpi[1] has had opportunity for investigating over 300 cases of epidemic jaundice occurring in two base hospitals during 1916 from the Isonzo sector. The epidemic, which made its appearance with a few sporadic cases at the end of 1915 and reached a high figure in the following January, died out from March to June, and attained its maximum intensity from August to December, 1916. There was a strict parallel between the epidemic of camp jaundice and sporadic cases among the troops in garrison. Several interesting facts in Professor Carpi's observations deserve notice. He found that the period of incubation was usually 15–20 days, and in some cases 25–30 days or longer, and the question arises whether the disease may not have a still longer incubation period or whether cases of this kind are the result of infection in hospital. He found that inoculation of the virus in a guinea-pig could give rise to a latent infection capable of manifesting itself only after a long period, in one instance as much as 131 days, and he therefore inclines to the view that in man also there may be a long period of incubation and latency of the infection, and that many of the cases arising sporadically may represent the active phase of an infection contracted some time previously at the original infective focus and slowly developed. A further interesting point is the result of the blood examination in Professor Carpi's cases. In the initial period of the disease there was a polynuclear leucocytosis and in some severe cases myelocytosis with erythroblasts. In the later stages the polynucleosis gave way to lymphocytosis with eosinophilia. These peculiarities may afford a differential diagnosis between spirochætic jaundice and certain forms of typhoid and paratyphoid infection which are characterised by leucopenia with lymphocytosis. Serological investigations from the point of view of the differential diagnosis between spirochætal and typhoid or paratyphoid infections also afforded results worthy of mention. Out of 112 cases it was found that a positive agglutination with typhoid and paratyphoid A was very rare, but somewhat less so with paratyphoid B. These results in individuals recently vaccinated do not lend much support to the theory of Frugoni, which attributes the greater part of cases of epidemic camp jaundice to paratyphoid infection. None of the cases under observation showed any clinical affinity with either typhoid or paratyphoid. Good therapeutic results were obtained by the administration of mixed mercurial and arsenical preparations, as evidenced by the prompt diminution of jaundice, lymphatic gland enlargement, and tumefaction of liver and spleen. Even during the febrile period no harmful results ensued from their administration, neither was albuminuria unfavourably affected.

[1] Il Policlinico, Practical Section, July 29th, 1917.

As we go to press the Conference of Representatives of Local Medical and Panel Committees has begun its deliberations in regard to the important matters at issue between insurance practitioners and insurance committees.

AT its meeting on Monday last the National Council for Combating Venereal Diseases ratified the resolution of its Executive Committee to refrain from recommending artificial prophylaxis.

THE CONTROL OF VENEREAL DISEASES

SOME PRACTICAL POINTS IN INTRAVENOUS MEDICATION:

WITH SPECIAL REFERENCE TO THE INJECTION OF ARSENO-BENZOL PREPARATIONS.

BY H. W. ABBOTT, M.R.C.S. ENG., L.R.C.P. LOND.

THE treatment of syphilis by the intravenous injection of salvarsan or one of its substitutes is becoming daily of more and more frequent occurrence, and, most probably, in the near future, will be the one recognised method of combating this disease. In the vast majority of cases the sufferer applies to the general practitioner for advice, and thus it will inevitably become necessary for him to gain proficiency in intravenous medication in order to be able to give his patients the benefit of this, the latest, and probably the best, means of treatment.

The operation, though requiring a certain amount of skill, should not be beyond the ability of anyone who cares to give a little time and thought to learning its technique, and it is with the hope of smoothing away any difficulties which may have been encountered that I have ventured to write this paper. It is in no wise intended for the specialist, but for that large branch of our profession, the men in general practice, many of whom have probably not had the opportunity of attending any of the post-graduate courses on venereal disease. Much of the subject matter of this article has been obtained from personal observation and experience, but a certain amount is based upon, and follows, the teaching of Lieutenant-Colonel L. W. Harrison and Mr. (late Captain) C. H. Mills, of the Military Hospital, Rochester-row, London, S.W., to whom my indebtedness is gladly acknowledged.

There are several methods employed in passing a needle into the lumen of a vein, but in the present paper I shall confine myself to describing one which is very frequently adopted and which is perhaps, on the whole, the best. Certain preliminary conditions are, however, common to all methods, and much of the success of the operation depends upon the precise fulfilment of these precedent requirements. Thus, the patient must be properly prepared, he must be placed in a definite position with regard to the source of light, the skin must be fixed near the site of the injection, &c.

Preliminary Considerations.

First, then, it will be as well to consider these preliminary conditions upon which success so much depends.

(*a*) *Preparation of the patient.*—This should be very similar to that required for an anæsthetic. The patient ought to have fasted for at least six hours previous to the intravenous injection, otherwise there is a great liability of his vomiting during or immediately after the operation. A smart saline purge is to be given on the previous day, and he should be instructed to avoid drinking much fluid during the 12 hours immediately preceding the injection and to abstain altogether from taking liquids for the last six hours. Thus the tissues have lost a good deal of moisture, they are physiologically "thirsty," and simply "mop up" the arsenic from the blood stream after it is injected much to the detriment of the health of the *Spirochæta pallida*, the micro-organism which causes syphilis.

FIG. 1.



The dotted line shows the course of the vein as seen before puncture of the skin. The arrow indicates point of the needle in the overlying skin. The firm line illustrates the displacement of the vein caused by the thrust of the needle though the unfixed skin.

(*b*) *Fixing of the skin.*—Fixation of the skin, the essential feature of which is that it immobilises the subcutaneous vein, is one of the most necessary factors of success. If this be not done the thrust of the needle as it traverses the skin will most probably displace the vein laterally and longitudinally—i.e., it will produce a kink in it (Fig. 1). I need hardly remind the reader that it is extremely difficult to place the bevel of a needle within the lumen of a kinked vein. The skin is fixed by pressure exerted on its surface. It is convenient to use for this purpose the second and ring

fingers, slightly separated, of the left hand; but any digit will serve, the thumb in certain positions being extremely useful. The pressure should be exerted at a spot about 3 inches nearer to the hand than the site of the puncture; this leaves sufficient room in which to work. In fixing the skin, do not drag the vein towards either side, but just pull the skin slightly down towards the hand, exactly in the same direction as the course of the vein. The integument is thus put gently on the stretch, but enough force must not be used to obliterate the lumen of the vein. Now press the skin upon the subcutaneous tissues sufficiently firmly to counteract the thrust of the needle.

(c) *Position of the patient.*—Until fairly recently it was considered necessary for the patient to lie down during an intravenous injection of salvarsan or one of its substitutes, and this recumbent position was maintained for some 24 hours subsequently. It has been shown, however, at the Military Hospital, Rochester-row, that such procedure is an unnecessary precaution. Many hundreds of injections have now been given while the patients have been seated in a chair. Moreover, at the conclusion of the operation they have been free from restraint; neither has there been the slightest cause for anxiety arising therefrom. In private practice the fact that our patient can be sent away immediately after the operation is completed very much simplifies the matter. Let the patient therefore sit in a chair placed alongside a narrow table about 3 feet wide and of a convenient height. He is thus sitting sideways close to the table, over which a couple of sterilised towels are placed, and upon these the patient lays his arm. It will be seen that, by reversing the position of the chair, either arm can be used for the injection. There should be ample light coming towards the surgeon. To ensure this the table is placed near a window, and the chair will be along that side which is nearer the source of illumination. Make the patient lean well back in his chair and a flood of light will stream along the arm, showing up, like thick cords, the prominent distended veins.

(d) *The tourniquet.*—The arm having been bared, a length of rubber tubing of 18 inches is applied above the elbow as a tourniquet, a piece of lint first being placed round the arm to take the immediate pressure of the tubing. Put the rubber on the stretch as it is used and make it tight enough to constrict the veins, but not to obliterate the radial pulse. Commence by placing the middle of the tourniquet behind the upper arm. Bring the two ends to the front, looping one end under the other to keep the tourniquet in position. The loop is easier to undo than a knot, simply requiring to be pulled. Now instruct the patient tightly to clench his fist. If in doing this there is a tendency to flex the forearm, put a roller bandage under the back of the wrist. and press the fist down over this so as to keep the arm straight.

(e) *Position of the surgeon.*—When passing a needle into the interior of a vein one can often see the course of the vessel better by looking somewhat horizontally along the arm rather than vertically over the top. In this way the course of the veins appears very like the metals of a railroad when looking along its track. The position the operator assumes is somewhat like that which a billiard player adopts when making a "shot."

(f) *The needle.*—The best method of holding the needle is to grasp its shoulder between the thumb and first finger of the right hand, if an ordinary instrument, say a Weintraud or a Record, be employed. A much more sensitive touch can be obtained by this method than by holding the instrument in any other way. The writer, however, always uses a needle made for him by the Holborn Surgical Instrument Company, Limited, of Thavies-inn, London, E.C. It has a handle placed on the upper surface of its mount and over the centre of gravity of the instrument, thus giving a perfect sense of balance. In practice it is held by its handle, when it will be found that the "grip" so obtained imparts to the instrument a greater delicacy of touch than has hitherto been possible and the surgeon can, with the utmost ease, give to the point of the needle every gradation of movement which may become necessary in order to ensure its entry into a vein. (Fig. 2.) The bevel of the

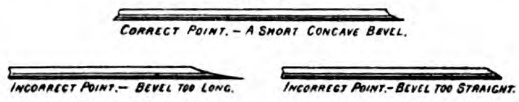
FIG. 2.



needle used for its intravenous injection should not be as long as that of a needle ordinarily used for serum work, because it is necessary that the whole of the bevel be in the vein. If, however, the bevel be very long, there is the possibility of its being partly within and partly without the blood stream. Another point to note is, that the bevel ought not to be ground straight, but should be concave, because this shaped edge more easily picks up the vein at all. (See Fig. 3.)

(g) *The site of the injection.*—In the writer's opinion the best vein to select for the injection is the radial, and at a point some three inches below its junction with the median cephalic. Here the radial vein lies over a convexity, so that the operator is not working in a hollow, which is frequently the case, especially in fat arms, when one of the veins at the bend of the elbow is selected. Further, the radial is one of the most immobile veins in the arm. It is also straight and fairly long. In selecting a vein it is

FIG. 3.



not wise to choose one of the largest, because a clot sometimes forms after the injection, and it is as well not to risk a clot in one of the main channels. Again, if a vein of medium size is chosen, we still have the larger ones to fall back upon if we fail successfully to pass the needle into the first vein. Before passing the instrument make quite certain, by rolling the selected vessel between the finger and the subcutaneous tissue, that there is not a thrombus from a previous injection. If there should be one, then select another vein. Clean the needle well before using it, or you may leave a black puncture mark, caused by oxide of iron, which is irremovable.

(h) *Methods of producing venous turgescence.*—Sometimes the veins of the arm, notwithstanding the application of the tourniquet, do not stand out so prominently as desired, and, in order to achieve this most helpful condition, the surgeon may employ any or all of the following methods:—1. Hang the arm down for a couple of minutes, at the end of which time apply the tourniquet while the arm is still dependent. 2. Subsequent to the application of the tourniquet, swing the arm round like a windmill for a dozen times. 3. After the tourniquet has been applied, make your patient clench and unclench his fist several times. 4. Give the arm half-a-dozen really sharp slaps—enough to redden the surface. This manœuvre frequently causes the veins to become tense with blood, probably through reflex stimulation. 5. Massage the arm from the wrist to the elbow. To do this, separate widely the thumb from the rest of the hand, and apply the concavity thus formed to the convexity of the surface of the arm. Then rub firmly upwards towards the elbow for half-a-dozen times. The operator will be surprised at the result unless he have already practised this movement. 6. Soak the hand and arm in water as hot as can be borne for ten minutes. Then apply the tourniquet. The limb can be conveniently soaked in hot water by means of an enamelled pail.

Insertion of the Needle.

Having thus disposed of the preliminary considerations, we now come to the actual injection of the drug. The skin having been fixed, hold the needle very nearly flat—i.e., very nearly parallel with the plane of the skin, and likewise in the direction of the vein and immediately over its "crown," by which, of course, is meant the centre or highest point of its track. With one movement pass the needle, bevel upwards, through the whole thickness of the skin and proceed onwards subcutaneously for half an inch.

It has been stated by some authorities that the "eye" or bevel of the needle should be downwards—i.e., towards the

FIG. 4.



vein; but you will find that the needle is much more easily passed through the skin, and it picks up the outer wall of the vessel much more readily when its bevel is turned upwards away from the vein. Indeed, the bevel of the needle is very like the edge of a carpenter's plane, and should be directed similarly towards any object it is intended to cut. (See Fig. 4.) The point of the needle is now in the subcutaneous tissue between the skin above and the vein below and lies immediately over the vein. At this stage it is very important to define the position of that portion of the needle which is under the skin. Without knowing this the inexperienced operator is very liable blindly to plunge about in the subcutaneous tissues, often traversing the vessel, and in any case failing to get the bevel of the instrument into the venous blood stream. In order to determine the position of that portion of the needle lying subcutaneously, lift the needle bodily up away from the deeper structures towards the surface of the skin and depress the shoulder slightly. This movement reveals

the exact situation of the whole of that portion of the needle under the skin, because, in bodily lifting the instrument up, you have stretched the skin tightly over it, and thus its position is accurately marked.

Now look for the vein and note its course with your eye or feel it with your left hand. If by any chance the point of the needle be not lying over the centre of the vein, alter subcutaneously the position of the instrument so that the point does occupy this situation relative to the vein. Refix the skin if you have released your hold in order to search for the vein. Then simply depress the point of the needle sufficiently to engage the wall of the vessel, but not enough to traverse it, and push gently and steadily along the course of the vessel; the needle *must* pick up the vein, and as you proceed you will feel a sudden "give" in the resistance, a sudden relaxing of the tissues as the needle enters the vessel, and on looking at the end blood will be seen to be flowing. Sometimes a distinct "click" is heard as the needle pierces the vessel wall. It often takes, however, an appreciable time, something like two or three seconds, for the pressure in the vein to force the blood backwards through the narrow lumen of the needle and flow out at the other end. Therefore, do not be in too great a hurry to decide that the bevel of the needle is not within the interior of the vessel.

Another phenomenon which will be noticed is the formation of a dimple in the skin, a little distance behind the point of the needle. This occurs at the instant when the needle first impinges upon the vessel wall and the mechanism of its production is as follows: When the needle, as it is gently pushed onwards, first reaches the vein, it does not immediately pierce it, because the actual tip of the needle is really the apex of a triangle, the sides of which are formed by the bevel. Now these sides, diverging from the apex, offer a certain amount of resistance to the passage through the coats of the vein. Thus the first result of the impact of the needle against the vessel wall is to push it onwards. The vein is, however, connected to the skin by the subcutaneous tissue, and as the vessel is pushed in front of the needle it drags the skin after it. Finally, however, the needle pierces the coats of the vein, the vessel slips back, the tension between itself and the skin is released, and the dimple disappears. The formation of this dimple in a good "rallying point" in the operation of intravenous medication. It does not always occur, especially if one is using a fine needle with a very sharp point, or if the instrument is thrust into the vein by "stabbing" at it. There is then very little pushing of the vessel in front of the instrument.

The formation of the cutaneous depression ("the dimple") is diagrammatically illustrated in Fig. 5.

FIG. 5.



It is often found that after the application of the tourniquet to an arm practically devoid of fat the veins present immediately beneath the integument—i.e., that there is no pad of subcutaneous tissue between the vessel and the skin. In such patients the operator will find that as soon as he has passed the bevel of the needle fairly through the whole thickness of the skin the instrument is already within the venous blood stream, the skin and the closely applied vessel having been punctured practically at one and the same time.

As soon as the blood is definitely and continuously flowing from the end of the needle the tourniquet can be removed and the instrument connected with the apparatus which the practitioner is using for the injection of the drug.

The one certain indication that the bevel of the needle is within the lumen of the vein is blood issuing from the end of the instrument. In order to prevent contact with the patient's skin I have found it useful to place a piece of lint soaked in 1 in 1000 hyd. et potassii iodidi over the arm at an appropriate distance from the puncture, which thus absorbs the extravasated blood. If there be no blood escaping from the base of the needle, then its bevel is not within the lumen of the vein, unless of course the instrument be not patent. This loss of patency occasionally occurs through a tiny mass of subcutaneous tissue intimately mixed with blood clot plugging the vessel, which condition is sometimes brought about by repeated unsuccessful attempts to pass the needle into the vein. If this sequence of events has happened the surgeon will often notice that, although blood be not issuing from the base of the needle, yet it is leaking a little along the track of the instrument, and appearing at the site of the skin puncture; there is thus a great probability of the bevel of a blocked needle having been passed into the venous blood stream. It is better in such a case to try venipuncture at another spot. Do not withdraw the first needle until the second has been successfully passed, because, when left *in situ*, the needle acts as a plug for the previous puncture in the vessel wall, and prevents, to a large extent, extravasation into the surrounding tissues during turgescence of the veins. To obviate any blocking of the needle by other material, it is wise always to keep a wire stylet in the instrument when not actually in use.

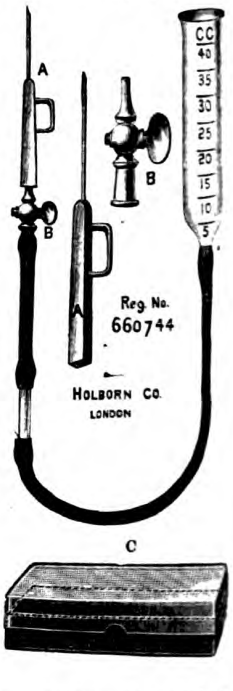
Sometimes, however, blood begins to issue from the base of the needle, proving that the bevel is within the vein, but the flow will cease almost as soon as it has begun. This phenomenon indicates that the needle has completely transfixed the vein, and consequently that the bevel is now lying in the tissues beyond the distal portion of the vessel wall. If this happens it is only possible for blood to flow from the end of the needle during the time that its bevel is passing across the blood stream, as soon as it is beyond the flow stops. It is a sign of faulty technique, the instrument having been held at too great an angle with the plane of the skin. It can scarcely be too strongly impressed upon the operator who is commencing intravenous medication that the needle should be passed, at all events, through the skin very nearly parallel with its surface. If this accident has befallen the operator the instrument should be slowly withdrawn until you find that a position is reached when blood re-commences to flow. Then you will know that the bevel has been withdrawn from the tissues beyond, and is again within the interior of the vein. Should, however, a clot have been formed meanwhile in the stem of the needle, blood will not flow until the obstruction has been removed, the method for doing which is described later in the article.

Injection of the Drug.

Salvarsan or one of its substitutes may be introduced intravenously either (1) by pumping it into a vein, (2) by the action of gravity.

Gravity is the better method, because if the needle is not in the vein the solution will not flow, at all events but very slightly; whereas one can always force, by means of a syringe or a pumping apparatus, fluid into the subcutaneous tissues. At first sight it would seem that if the operator were forcing the solution into the tissues and not into the vein it would be quite easy to recognise the swelling so caused. However, many a good operator has failed to do so, especially in a thick arm, and where the point of the needle is deep, and on the far side of the vein. Moreover, gravity apparatus is simpler, all that is required being a funnel, a length of rubber tubing with a glass "window," and a tap.

FIG. 6.



After a trial of both methods the writer has now come to use exclusively the gravity apparatus, the only drawback to the use of which very simple contrivance is that an assistant is needed.

For the average general practitioner who is, of course, not giving intravenous injections every day the "914" preparations—viz., neo-salvarsan, novarsenobillon, neokharsivan, &c.—are preferable to the "606" preparations, because salvarsan and its substitutes have to be rendered alkaline before they can be used, whereas the others are sent out already alkalinised; moreover, as they are extremely soluble in water there is absolutely no technique required in order to form an alkaline solution. All one has to do is to empty the contents of an ampoule of, say, novarsenobillon into a vessel containing distilled water, solution takes place immediately, and the drug is ready for injection.

Salvarsan has not given me any better results than novarsenobillon, and for many months now I have exclusively used this latter preparation with the happiest effects on the patients. In practice it is dissolved in 20 c.c. of distilled water, with which it forms a perfectly clear yellow solution. The glass funnel (Fig. 6) employed is of 40 c.c. capacity marked in 5 c.c.'s; the rubber tubing measures 40 inches complete with the window, which is situated 3 inches from the end. To the extremity of the tubing is fitted a Harrison's

tap (B), which makes a perfect joint with the special needle (A) I have devised, or with a Weintraud's needle. This apparatus is very conveniently kept in a strong metal nickel-plated box which has been specially designed by the Holborn Surgical Instrument Company, Thavies Inn, London, E.C., for sterilisation by means of boiling. The box is of such a size that if one does not happen to have a steriliser handy it can be put into an ordinary saucepan. (See Fig. 6, C.)

If the practitioner prefers to use "606" preparations—i.e., salvarsan, kharsivan, arsenobillon, &c.—then the funnel should be of 300 c.c. capacity, because the best dilution of salvarsan is about 1 decigramme to 30 c.c. of water; hence 0·6 gramme will require 180 c.c. to dissolve it, otherwise the technique remains exactly similar. The tubing is emptied of air by allowing saline to run through. This can be very expeditiously accomplished by first lowering the funnel containing the saline until it becomes the most dependent part, then as the funnel is gradually raised again the fluid "chases" the air of the tubing. As soon as the needle has been passed into the vein the tap is connected, turned on, and a little saline allowed to run into the vein, then the solution of novarsenobillon is poured into the funnel and the saline renewed just before the last of the solution has disappeared. As soon as the surgeon sees that the fluid passing along the "window" has changed colour from yellow to white he will know that all the drug has passed into the vein and he is now only injecting saline solution. If the medical practitioner is not situated near a hospital, where, of course, freshly distilled water and normal saline made therefrom can be readily obtained, he will be able to get both from Messrs. Allen and Hanburys, of 7, Vere-street, London, W., or the Holborn Surgical Instrument Company. The distilled water supplied by the former under the name of "Apyrogen" water is specially prepared as a diluent or solvent of substances for intravenous injection. It is distilled in a Jena glass apparatus and is free from water toxin. The distilled water or normal saline is put up in sealed amber glass tubes ("azoules") of a capacity varying from 10 c.c. to 250 c.c., and can be kept for an indefinite period. The firm distil nearly every day, so that fresh solutions can always be obtained, but I have used distilled water and normal saline of their manufacture over three months old for intravenous medication without the slightest febrile reaction, although the temperature was taken morning and night for one week after the operation. These ampoules of distilled water, normal saline, &c., are kept in stock by the Holborn Surgical Instrument Company.

While the injection is being given it occasionally happens that the flow ceases. This may be due to either of the following causes: 1. The "eye" of the needle may be pressing against some part of the vein wall, the remedy for which is to revolve the needle. 2. A clot may have formed in the lumen of the needle. To remove this obstruction disconnect the needle from the apparatus. Constrict the venous circulation; pass a stylet down the lumen of the needle so as to loosen the clot, when the venous pressure set up by constricting the veins will drive the clot out of the needle, and the operation may be resumed. 3. The bevel of the needle may be out of the vein. This can be verified by a manœuvre similar to that used under heading 2. If after constricting the venous circulation and clearing the lumen of the needle no blood issues from the end of the instrument, then the eye is not in the lumen of a vein, and a fresh puncture had better be made, unless by moving the needle backwards or forwards one can replace the bevel of the instrument within the blood stream, as is evidenced by the blood flow. After the injection is completed the patient has a pad of sterilised lint placed over the puncture, the tap is turned off, the needle is withdrawn by a quick movement, and he holds his arm vertically upwards for a couple of minutes, keeping light pressure on the pad, which is then removed. The site is now cleansed with a solution of 1 in 1000 hyd. et potassii iodidi, and painted with a solution of iodine 2 per cent. in spirit, as was also done immediately preceding the puncture.

Finally, a piece of rubber plaster an inch square, with a tiny piece of boracic lint in the centre to cover the actual wound, is applied, and the dressing is complete. The arm should not be flexed at the elbow for one hour after the injection, so as to prevent blood being forced from the puncture in the vessel wall into the subcutaneous tissues.

The patient is now free to go home, and should not indulge in any form of strenuous exercise for a couple of hours; indeed, it is better when he arrives home to lie down for this period.

Holloway, N.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING

April 30th, 1917.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
Leicester	42	0·07	4·72	8·98	1·45	1·99	17·21	1·16	0·37	0·14
London—										
Meteorological Office...	44	0·10	0·64	7·47	1·58	3·17	12·96	1·45	1·03	0·13
Embankment Gardens	46	0·31	2·20	4·77	3·14	6·17	16·58	3·71	0·95	0·24
Finsbury Park ...	68	0·07	1·28	5·74	3 24	5·36	15·70	3·92	0·78	0·07
Ravenscourt Park	79	0·60	4·20	11·05	3·55	4·00	23·37	2 67	0·65	0 11
Southwark Park	43	0·09	1·08	2·76	2 85	4·99	11·76	2·94	0·91	0·10
Wandsworth Com.	33	0·02	0·41	1·32	1·65	3·82	7·23	1·79	0·58	0·04
Golden Lane ...	46	0·05	1·98	3·34	1·12	2·60	9·09	1 45	0·59	0·12
Malvern	36	Nil.	0·25	0·41	0·64	1·28	2·60	0·59	0·18	F.t.
Manchester—										
Queen's Park ...	41	—	—	3·70	—	—	10·44	—	—	—
School of Technology	31	—	—	4·15	—	—	12·72	—	—	—
Newcastle-on-Tyne	81	0·65	10·75	23·70	2·90	6·28	44·28	3·12	0·63	0·09
Rochdale	66	0·27	7·20	18·02	—	—	—	—	—	—
St. Helens	56	0·65	3·68	8·38	2·67	9·13	24·50	3·97	1·29	0·22
SCOTLAND.										
Coatbridge	32	0·12	1·40	4·15	1 65	3·32	10·64	2·08	0 21	0·14
Glasgow—										
Alexandra Park...	18	0·05	1·40	3·23	0·84	2·17	7·69	1·29	0·24	0·05
Bellahouston Park	28	0·06	1·99	4·82	1·00	3·99	11·86	1·62	0·14	0·11
Blythswood-sq....	23	0 14	2·75	5·95	1·28	3·63	13 75	2·33	0·19	0·13
Botanic Gardens	40	0·04	1·47	3·30	1·98	4·77	11·56	2·62	0·22	0·16
Richmond Park...	35	0 06	0·97	1·74	1·32	3·46	7 55	1·75	0·22	0·15
Ruchill Park ...	35	0·08	2·54	6·02	1·16	3·63	13 43	1·74	0 22	0·04
South SidePark..	20	0 33	0·36	1·88	0·66	1·66	4·89	0·86	0·10	0 07
Tollcross Park ...	—	—	—	—	—	—	—	—	—	—
Victoria Park ...	28	0·03	0·54	1·05	1·11	2·96	5 69	1·47	0·15	0·12

May 31st, 1917.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Insoluble matter. Carbonaceous other than tar	Insoluble matter. Ash.	Soluble matter. Loss on ignition.	Soluble matter. Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Included in soluble matter. Chlorine (Cl).	Included in soluble matter. Ammonia (NH_3).
ENGLAND.										
Leicester...	51	0·17	3·12	9·37	1·13	2·92	16·70	1·55	0·52	0·25
London—										
Meteorological Office...	62	0·14	1·11	3·12	1·24	2·48	8·09	1·30	0·44	0·18
Embankment Gardens	55	0·80	9·52	15·32	5·32	6·75	37·70	3·51	1·17	0 21
Finsbury Park ...	49	0·05	0·70	3·47	0·81	1·58	6·61	1·67	0·35	0·07
Ravenscourt Park	60	0·39	2·91	6·80	1·49	3·45	15·03	1·86	0·45	3·10
Southwark Park...	67	0·08	5·30	16·44	5·36	9·16	36·33	5·08	1·04	0·14
Wandsworth Com.	35	0·01	0·21	0·64	1·17	2·81	4·84	1·38	0·46	0·06
Golden Lane ...	55	0·03	2·33	8·11	1·10	3·08	14·64	1·64	0·66	0·24
Malvern	96	Nil.	0·21	0·48	1·44	3·01	5·15	1·21	0·33	0 03
Manchester—										
Queen's Park ...	42	—	—	—	—	—	13·30	—	—	—
School of Technology	31	—	—	—	—	—	15·60	—	—	—
Newcastle-on-Tyne	65	0·15	3·60	8·36	1·95	5·58	19·64	2·85	0·46	0·12
Rochdale...	—	—	—	—	—	—	34 60	—	—	—
St. Helens	86	0·21	2·23	5·68	1·72	7·69	17·53	3·24	1·79	0·26
SCOTLAND.										
Coatbridge	61	0·12	2·37	8·18	2·74	5·65	19·06	2·93	0·36	0·23
Glasgow—										
Alexandra Park...	65	0·25	2·91	7·89	3·26	5·87	20·18	2·59	0·14	0·39
Bellahouston Park	74	0·55	3·77	6·91	1·72	6·27	19·22	2 49	0·22	0·14
Blythswood-sq. ...	92	0·50	3·04	10·20	2·64	6·88	23·26	3·13	0·40	0·37
Botanic Gardens..	100	0·70	2·51	6·62	2 92	8·45	21·20	3·38	0·11	0·36
Richmond Park...	78	0·35	2·05	12·78	2·65	5·99	23 82	2·45	0·21	0·27
Ruchill Park ...	87	0·29	2·16	5·91	2·43	5·74	16·53	2·22	0·26	0·17
South side Park..	70	0·09	1·08	3·67	2·11	6·25	13·20	2·35	0·18	0·14
Tollcross Park ...	62	0·23	1·34	5·30	2·72	6·99	16·58	3·43	0·21	0·15
Victoria Park ...	83	0·29	1·28	5·68	2·34	8 36	17·95	3·42	0·20	0·24

F.t. = Faint trace.

There were no returns from Victoria Park, London station, for April and May, and at Tollcross Park, Glasgow, owing to an accident, the April sample was lost.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables.

THE ARMY COLLECTION OF WAR SPECIMENS:

THE OPENING OF THE EXHIBITION.

AN exhibition of the Army collection of war specimens was declared open on Thursday, Oct. 11th, at the Museum of the Royal College of Surgeons of England by Sir ALFRED KEOGH, Director-General of the Army Medical Service, who, at the same time, was presented with the Honorary Fellowship of the College. With reference to this presentation an interesting fact is revealed by the archives of the College. Many years ago Sir Alfred Keogh had actually received his number in the examination room of the College, when sitting for the Fellowship, at which point he was unexpectedly called up for foreign service, and had to discontinue the examination.

The ceremony of presentation took place in the presence of a large number of leading surgeons and physicians and medical officers serving with the Navy and Army, as well as of notable civilians. In a brief speech Sir GEORGE MAKINS, President of the College, recalled to the meeting Sir Alfred Keogh's distinguished services to his country as the head of the medical department of the Army in the South African War, as Rector of the Imperial College of Science and Technology, and now as Director-General of the Army Medical Service in the greatest war which the world has ever known.

Sir Alfred Keogh's Address.

Sir ALFRED KEOGH, after acknowledging the honour that had been done to him personally, as well as to the Service which he represented, declared the exhibition open in a brief address, in which he described the stages in the movement which had resulted in an increasing and most valuable store of pathological objects. As early in the history of the war as November, 1914, he said, a committee was constituted under his presidency to compile a medical history of the war, one of whose aims was to collect from casualty clearing stations and military hospitals examples of the diseases and wounds being endured by the soldiers in order that the best means might be adopted for their treatment. Specimens in illustration of these diseases and wounds would constitute an original and reliable source of knowledge for all time. The Army Medical College at Millbank, overworked and understaffed at the beginning of the war, was not in a position to undertake the formation of such a collection as the Medical History Committee had in view, and in May, 1915, Dr. Walter Morley Fletcher, secretary of that Committee, asked the assistance of the Council of the Royal College of Surgeons of England, who at once placed the Museum staff and workrooms of the College at the disposal of the Army Council. In January, 1916, Lieutenant-Colonel T. R. Elliott was placed in charge of this particular service in France, and specimens began to arrive in numbers, the willing coöperation being secured of younger pathologists attached to the clearing stations and hospitals in France—namely, Captain Herbert Henry, Captain H. W. Kaye, Lieutenant T. G. Shore, Captain G. Richardson, Captain Adrian Stokes, Captain W. S. Lazarus-Barlow, Captain E. M. Cowell, Major J. W. McNee, and Captain A. Petrie. Consignments from Egypt representing the diseases and wounds of the campaign in Gallipoli were sent by Captain G. B. Bartlett, and proved of particular value. In the spring of 1917 he appointed Sir John Bland-Sutton to organise the collection of specimens from hospitals at home—especially hospitals at which particular kinds of wounds are being treated, and in that direction also, said Sir Alfred Keogh, the objects of the Medical History Committee were being fulfilled.

The credit of holding an exhibition of the collection while the war is still going on was attributed by the Director-General to Sir Arthur Sloggett, Director-General of Medical Services in France, who urged that in this way the exhibition of specimens would have an immediate educative value. On the question being referred to the Council of the Royal College of Surgeons of England, the College, said Sir Alfred Keogh, at once made arrangements to proceed to the preparation of specimens for exhibition, the Medical Research Committee giving financial assistance. Mr. S. G. Shattock, pathological curator to the College, and his assistant, Mr. Cecil Beadles, undertook the dissection, examination, and exhibition of wounds in the various systems of the body. Colonel F. M. Caird, Colonel Sir R. Jones, Captain E. M. Cowell, Captain Raymond Johnson, Sergeant F. A. Izzard (of the Pathological Museum of the University of Cambridge), Captain G. Richardson, Mr. R. H. Burne, Captain H. E. Gamlen, Dr. F. Stoney, Captain F. A. Hort, Dr. Colin Mackenzie, and Sergeant A. K. Maxwell were among those mentioned by the Director-General as having in various capacities assisted to make the collection thoroughly representative, while he added that special thanks were due to the conservator of the Hunterian Museum, Professor A. Keith, who assumed responsibility for the description and arrangement of macerated specimens illustrating the lesions inflicted by modern missiles so far as bones and joints were concerned.

The Director-General closed his address by making a special reference to the exhibitions of plastic surgery supplied from the Queen's Hospital, Sidcup, where admirable sketches have been made of before and after conditions by Professor H. Tonks, F.R.C.S., with models and casts by Private J. Walkley Edwards; from the Military Orthopædic Hospital, Shepherd's Bush, represented by casts and drawings of deformed limbs before and after operation; and from No. 13 Stationary Hospital in France, whence have come a remarkable series of models, for which Major A. Charles Valadier and Captain H. L. Whale are responsible, showing war wounds of the jaws and the means which have been adopted for their treatment. To an extensive series of skiagrams of face and jaw injuries from the Croydon Military Hospital, sent by Colonel W. T. Lister, the Director-General also called attention. He then declared the Museum open.

The Collection of War Specimens.

Three rooms in the Hunterian Museum have been given up to the exhibition of the Army medical collection. Room 1 contains the section illustrating general means of wound prevention and the specimens of bone injury. Under the heading of Means of Protection we find metal helmets, breast plates, masks, and respirators, several helmets being shown bearing evidence that the heads of the wearers had been saved from mortal wounds. We next have specimens of wounds of the vault of the skull, among which are remarkable examples of extensive destruction, of perforation in all the diameters, of gutter wounds, and especially some interesting injuries where a very small missile has produced a far larger fracture than could have been expected, and other cases where a blow has caused a fracture of the inner plate of the skull, the outer plate remaining intact. There are in this room some notable specimens of injury also of the base of the skull and spinal cord, the upper and lower limbs, and pelvis.

The second room contains specimens prepared by Mr. Shattock and Mr. Beadles, and it is here that the effective characters of the wounds met with in modern warfare may be studied, both in their immediate and in their remote effects. Examples are set out derived from former wars—chiefly dried or bone preparations; also examples of gunshot wounds culled from civil practice. There are specimens from soldiers who fought with Sir John Moore in his retreat to Corunna; there are a few examples from Waterloo, and more of the wounds and injuries of the Crimean War; and there is quite a good series from the Austro-Prussian and Franco-Prussian wars. In those wars the same type of bone injury and the same septic inflammatory sequelæ may be noted, as is to be observed in the specimens of the present war, for the wounds produced by shrapnel and by shell fragments are of the same nature now as in former wars; the septic sequelæ are also the same. In this room are placed a number of models obtained by the late Sir Victor Horsley from his experiments to demonstrate the explosive effects of high-velocity bullets. Such bullets were fired into blocks of soft clay; the models represent the track of the bullet in the clay. In this room the study of modern military wounds can be made—wounds of entrance, wounds of exit, wounds at various stages after the date of infliction, in various stages of healing, and in various stages of sepsis. There are specimens of "excised wounds"—from cases where the surgeon has sought to remove the injured and infected tissues as soon as possible after the date of infliction. A series illustrating injuries to the chest, pleura, and lungs, with the various sequelæ which may follow such lesions, is of great interest. There is one very remarkable injury of the heart; the anterior wall of the right ventricle is extensively lacerated—yet the officer, a member of the Flying Corps, brought his machine safely to earth! There is a very complete representation of vascular injuries, selected and recorded by Sir George Makins.

Injuries of the bowel, stomach, kidney, genito-urinary tract, spleen, spine, larynx, and lung come next for examination. Certain specimens will be found to attract serious study as well as reflection. They represent the lungs of men who suffered in the first cloud of poisonous gas sent over our lines by the enemy early in 1915 at Ypres. The effects of this poison on the whole respiratory system may be studied at all stages, early and late. On the same stand are

ecorded the changes which become apparent in the kidney n cases of trench nephritis. Here, too, are represented the onditions, organic disturbances, and disorganisation pro-luced by the *Bacillus aerogenes*.

In one group of specimens are shown successful operations f a general kind, as distinguished from those upon special arts like the face and mouth. This group comprises: uccessful removal of injured kidney or spleen; of pieces of ounded blood-vessels; cases where vessels have been uccessfully sutured; the successful removal of wounded ops of the intestine; artificial union of the fractured ends f bones; removal of large fragments of bone or even entire ones, such as the astragalus and scapula, resulting in the aving of limbs.

In the third room there are hung on the walls a series f drawings by Sir Charles Bell, made in Belgium when e was treating the wounded from Waterloo, and in mpany with them will be found a wonderfully graphic ries of sketches by Colonel F. M. Caird representing certain nditions studied by him in France, such as the various ages in the development of "trench-foot." There are also pid drawings of the conditions resulting from guillotine nputations and pictorial notes of the effects of "Yperite," e of the poisonous offensive German gases.

Then follow, on the same wall, a collection of Sergeant . K. Maxwell's drawings, accurately and minutely detailed cords of clinical conditions, seen in our military hospitals France. To the expert each drawing tells its own story; r the less expert the attached explanatory cards will be of rvice. There are also here some excellent drawings by r. S. A. Sewell, who is well known as an illustrator of thological subjects.

At the north end of Room III., close by the door entering to the Museum Hall, are placed a series of specimens for hich Major Valadier, R.A.M.C. (No. 13 Stationary Hospital, E.F.), is responsible. In this work he has had associated th him H. L. Whale, R.A.M.C. They illustrate the nature the jaw wounds and facial injuries which have undergone atment at that hospital, with the results obtained by eration. The exhibits include plaster casts, excellent otographs (many of them in colour), X ray photographs, d a set of wax models of high workmanship.

A group of casts and models obtained from the Military thopædic Hospital, Shepherd's Bush, follows. The condi-n of disabled and deformed limbs before and after treat-nt are shown by means of plaster casts; the treatment opted, splints, &c., are represented by means of models.

Next we have an exhibit of great interest from Queen's spital, Sidcup (formerly Cambridge Hospital, Aldershot). ax models, plaster casts, and particularly a series of strong d vivid drawings by Professor Henry Tonks, F.R.C.S., of Slade School of Art, depict for the visitor the facial ormities which Major H. D. Gillies and Captain J. L. mard are called on to treat, the methods which they ent and adopt, and the degree of success which attends ir efforts. The models and casts are the work of Sergeant Phillips and Private J. Walkley Edwards, who are ached to Queen's Hospital.

In a stand in the centre of the room, immediately in front the Hunter statue by Weekes, is placed Colonel W. T. ter's collection of injuries and wounds of the eye. Here y be seen the very numerous forms of lesions which affect eye in modern warfare—rupture of the eyeball from ious causes, the lodgment of missiles, and the pathological uelæ. A series of drawings elucidate the functional and ical disturbances which were observed in each case.

rranged along the centre of the room is a large collection asts, models, and splints from Queen Alexandra Military spital, Millbank, sent by Captain F. A. Hort, R.A.M.C.

olonel V. Soubbotitch, of the Serbian Army Medical vice, has placed on exhibition his splint-apparatus for atment of fractures of the lower limb.

here can be no doubt that the policy of holding an rim exhibition of the collection in the stage in ch it now is will be of remarkable value. There enough material at present to give the result of ective skill; men will be able to learn from each r's ingenuity, and to avoid each other's errors. As official catalogue of the Museum says: "It is when one eys these collections that one ardently wishes that tary surgeons of former campaigns had taken some pains reserve the medical and surgical conditions they were d on to face. It is so hard for a surgeon to realise that conditions he is only too familiar with in the heat of a paign are unknown to those who do not share with him labours of the field, and will also remain unknown to e who have to undertake the care of soldiers in future s unless a record is made. There cannot be any doubt in our former wars we have been too apt to attend to medical exigencies of the campaign, and when it closed ry our experience instead of consolidating it for the use future time and generation."

Correspondence.

"Audi alteram partem."

HOME-BRED MALARIA.

To the Editor of THE LANCET.

SIR,—Dr. H. B. Newham has done well, in your issue of to-day, to call attention to the importance of distinguishing recurrences in soldiers from infected countries and the true home-bred malaria. I write to urge the most careful study of suspected cases of the latter. A few have occurred and there are sure to be others, as there are hundreds of malaria patients in the country and the anopheles is widespread. There are no grounds for alarm. A colony of patients from Salonika has fluttered the academic dove-cotes in Oxford where mosquitoes are prevalent—even anopheles have invaded the bedroom of the Regius Professor of Medicine! Every precaution has been taken by Major Ormerod and Captain Dale, under the direction of Sir Ronald Ross, and, so far as I know, no infection has occurred. In temperate climates districts from which malaria has disappeared have not, to my knowledge, been reinfected. Italian labourers brought the disease to the New England States and there were a few cases but no serious outbreak; nor was the progressive fall in the incidence of malaria in Baltimore interrupted by the importation of many infected Italians. The slight risk, then, from our malarial soldiers in this country may be faced cheerfully. The same may be said of Canada, to which country many infected soldiers have returned. Parts of the Province of Ontario were hot-beds of the disease, which within my memory has disappeared from the districts about the western end of Lake Ontario and the northern shores of Lake Erie. The marshes are there and the anopheles are there, but the disease has gone. As in parts of Italy, the important factor appears to have been the cinchonising of the inhabitants. I retain lively recollections of the buzzing ears of my boyhood from the large doses of quinine administered to us in the spring and autumn.—I am, Sir, yours faithfully,

Oxford, Oct. 13th, 1917. WILLIAM OSLER.

"ANOTHER CASE OF MALARIA CONTRACTED IN ENGLAND."

To the Editor of THE LANCET.

SIR,—In my note published under this title in your issue of Oct. 6th I should have stated that there was no history to be obtained of a previous attack of malaria or of any illness suggestive of malaria. Undoubtedly the possibility suggested by Dr. H. B. Newham in your last issue of a primary attack in Salonika cannot be excluded; but this is exceedingly unlikely, and in view of the publication in your columns of other cases of malaria contracted in this country there seems no good reason for assuming an explanation so much more improbable. I am, Sir, yours faithfully,

R. LOY WILCOX.

North-Western Hospital, N.W., Oct. 15th, 1917.

THE GERMICIDAL POWER OF FLAVINE.

To the Editor of THE LANCET.

SIR,—Professor R. T. Hewlett, in your issue of Sept. 29th, offers some criticisms of our work on flavine.[1] His conclusion is, firstly, that from his experiments—

"The germicidal value of flavine comes out very much lower than that stated by Browning and his co-workers. The difference between the two sets of results is probably due to the use in my experiments of a number of organisms much larger than that employed by Browning and his co-workers."

This demands several observations. 1. Professor Hewlett ascribes to us the use of an amount of organisms 12 times less than we actually used; he has evidently misread our original work, but this becomes a minor point in view of the fact that in our second communication[2] (of which Professor Hewlett was cognisant, but to the substance of which he makes no reference) we had already published our work with larger numbers of organisms, which, so far as one can judge from Professor Hewlett's paper, quite equalled

[1] Browning, Gulbransen, Kennaway, and Thornton, Brit. Med. Jour., vol. i., 1917, p. 73.
[2] Browning, Gulbransen, and Thornton, ibid., vol. ii., 1917, p. 70.

the amounts employed in his experiments. 2. Professor Hewlett knows very well that the "germicidal value" affords significant information only when several antiseptics are compared under precisely similar conditions. In our original communication we gave the comparative values, as obtained in repeated tests, from which the high potency of flavine (acriflavine) was clearly apparent. Now Professor Hewlett finds fault with our results in the case of flavine, but he does not accuse us of giving unjust figures with regard to the old antiseptics, and it is by the latter that the comparative potency of flavine is estimated. Further, in his own work on flavine he omits all comparisons; we feel sure that Professor Hewlett would not desire readers to believe that he wished them to accept his statements as mere dogmatic assertions and yet that is in effect what he does. The general medical reader, who is himself without laboratory facilities, can only draw conclusions from the data afforded, and Professor Hewlett omits half of the data which are necessary in order to support his contention that we have exaggerated the potency of flavine. Again, Professor Hewlett raises the old point that the action of an antiseptic when mixed with a quantity of pus affords an important indication as to its therapeutic efficiency in an infected wound. From the point of view of use as a test medium, pus is so extremely inconstant in composition that results vary enormously; but, as on a previous occasion,[3] we can only repeat that any surgeon who treated infected wounds by mixing up antiseptic with the pus contained in them, would entertain a curious idea as to his functions!

It seems, however, that the real meaning of Professor Hewlett's work is an attempt to give expression to the view that a substance which is to possess any therapeutic value as an antiseptic must *rapidly kill* organisms. The time-hallowed tests employed in the standardising of antiseptics, of course, gave information on this point and almost on nothing else; the practical inefficiency of the substances, which were accredited by such tests, e.g., phenol and mercuric chloride, when it came to putting an end to suppuration in infected wounds or to preventing its occurrence, is well known. Now, we have shown that one of the pre-eminent qualities of the flavine bodies is their *antiseptic* power in the true sense of the word, i.e., their capacity—in a serous medium, such as exists on the surface of a wound which is subjected to the ordinary procedures of surgical cleansing—for inhibiting the activity of organisms in very high dilutions, which are relatively harmless to the tissues. This combination of desirable properties in one substance is new; but the idea of antiseptic action is not new; the conception of its value appears, however, to be novel to those who have concerned themselves with the cleansing of rubber gloves, sterilisation of infected rooms or sputum, and other common applications of antiseptics (purposes for which we have never recommended flavine); and, being novel, it seems to be either misunderstood or else regarded as odious according to the temperament of the critic.[4] We shall, however, endeavour to pursue our search for those properties of antiseptics which can be determined in the laboratory and which are of use as indicating substances of therapeutic value, and we shall be content to be judged in the long run by the massed opinion of those who are bound to rely on such adjuncts in the treatment of their patients. We do, however, deprecate destructive criticism, which contributes little or nothing to advance towards the solution of a most urgent problem, but which almost seems devised—however unintentionally—in order to "scare off" those who might be inclined to give an unbiassed trial to substances for whose utility in practice there is already a great body of evidence.

I am, Sir, yours faithfully,

Middlesex Hospital, Oct. 11th, 1917. C. H. BROWNING.

WAR DEAFNESSES.

To the Editor of THE LANCET.

SIR,—In a leading article on War Deafnesses in your issue of Oct. 13th you refer to a paper of ours which appeared in THE LANCET of the previous week. Two criticisms call for reply. Firstly, you state your belief that "any other powerful stimulus applied during the removal of the subconscious determination against hearing would have been as effective as suggestion proved," but you do not give any idea of the nature of such stimuli. Both of our cases had been treated without success for several months before we saw them by all kinds of powerful stimuli, and we applied every means we could devise before resorting to the pseudo-operation, the instantaneous and complete success of which surely justified the method. There is no question of its "frequent" use, as we have only applied it in the very exceptional cases in which all other treatment, such as simple re-education and persuasion, or suggestion with or without the aid of electricity, whilst awake, asleep, in the hypnotic state, or under light etherisation, had failed.

Secondly, you express doubt as to the correctness of our conclusion that total deafness associated with continued excitability of the posterior labyrinth is evidence of hysterical deafness, because "two cases are quite an insufficient basis for such a generalisation." But our conclusion is based on over 200 cases, not on the two cases which we quoted in detail only because of the exceptional interest attached to the dramatic manner in which they were cured. Before our conclusion can be rejected some very much stronger evidence is required than a bald statement to the effect that "cases of mild labyrinthitis occur in which there appears to be total deafness, but in which the canal reflex can still be excited." What is the evidence for this? Our experience teaches us that in such cases the mild labyrinthitis leads to mild deafness, the complete deafness being due to the addition of an hysterical element. This is a matter of extreme practical importance, as in such cases we have always succeeded in removing the hysterical element by suggestion so that partial hearing was noticed, sometimes many months after a diagnosis of permanent total deafness had been made elsewhere. On the other hand, acceptance of the notion that mild labyrinthitis may lead to complete deafness must result in the neglect of such treatment and the consequent perpetuation of the condition. There can thus be no question that from the patient's point of view our conclusions and the results which follow from these are infinitely more desirable than the pessimistic view taken in your leading article.

We are, Sir, yours faithfully,

ARTHUR F. HURST.
Netley, Oct. 15th, 1917. E. A. PETERS.

*** The success in the hands of Major Hurst and Captain Peters of the pseudo-operation as a sequel to a course of suggestion in the two cases cited is so striking that others will undoubtedly follow in their steps, and we therefore expressed the hope that some other stimulus less derogatory to the status of surgery might be found equally efficient. The existence of cases of total deafness with retention of canal excitability is a matter of pre-war experience.—ED. L.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

SIR,—The Board of Control has issued a circular with reference to "Service patients," or, in other words, sailors and soldiers who have become insane or are otherwise mentally affected. To suggest, as has been done, that asylums would in any case have had to receive insane sailors and soldiers as paupers and keep them as such is introducing into the question the lowest argument of all—the pecuniary one. And the question is not yet and by no manner of means settled. At the present moment insane soldiers are being admitted to county asylums as pauper lunatics through the medium of the Poor-law.

I wish to comment on the Circular of Instructions issued by the "Board of Control" on June 27th of this year relating to the classification and treatment of insane sailors and soldiers as "Service patients." Do not let us, then, obscure the issues by wondering what we are to do with insane sailors and soldiers after the war and how to cut their cost of maintenance to the lowest possible limit, which seems to be the end in view. The question of cost of both present and future accommodation and maintenance ought not to be approached in a parsimonious spirit, and yet it is at the root of the matter, because up to the present the Government has shown no desire to build asylums for the accommodation of insane sailors and soldiers, nor to provide for their accommodation other than in pauper asylums.

But the nation's indebtedness to those broken men calls for provision for them other than in pauper asylums and in

[3] Ibid., 1917, i., p. 177.
[4] See Browning, THE LANCET, Sept. 15th, 1917.

association with pauper and even criminal patients. The mere fact of giving them the cognomen of "Service patients" and paying for their maintenance at a little over the pauper and under the private rate will not dispauperise them in any sense of the term. Without labouring the point or entering into actuarial details, the allowance of 3*s*. 9*d*. above the pauper maintenance-rate is insufficient to clear them of the taint and stigma of pauperism.

To my mind there appears to be a very simple solution of the difficulty. Let the Admiralty and War Office at once decide that no insane sailor or soldier be discharged from either service until some months after the war has ended. In this way they can be detained under the Naval and Military Acts, and without certificate of insanity, in military hospitals or in places taken over as such. They will thus be saved from at least documentary evidence of insanity—the insanity which, but for the extraordinary vicissitudes through which they have passed, would in many cases have never occurred. Allocate, therefore, one or a portion of one of the asylums taken over by the War Office as military hospitals for this purpose. This would assure the relatives that these patients were not associated in any way with the pauper and criminal insane in pauper asylums. The Government apparently wishes to avoid the expense of the erection and upkeep of an asylum of its own; it prefers to pay for its insane soldiers at a maintenance rate that still keeps them within the confines of pauperism; and it is apparently willing that they associate with the pauper insane. It shelves its obligation in this way. And the Board of Control has apparently acquiesced. An asylum taken over by the War Office and devoted to this purpose would, of course, as time goes on, have an annual diminishing number owing to death or recovery, and would in the natural course of events as these changes took place revert to its original owners—the Asylum Committee—and to its original purpose, the accommodation of pauper lunatics. Any argument that with diminishing numbers this would entail the remainder being kept at an extravagant cost may be dismissed as puerile, for surely it is not beyond the official mental capacity to conceive that a smaller building could be taken over; and, further, the same objection, if objection it be, applies in the case of asylums and other buildings taken over for the wounded. In any case the Government will require after the war to erect an asylum for insane soldiers as the present Government ones will not have nearly sufficient accommodation.

If the policy of allocating one or a portion of one of the asylums referred to were adopted, for at least the period of the war, the only possible objection would be that friends, living to great distance, could not visit the patients. All this, however, inflicts hardships, and even in time of peace how many hundreds of soldiers serving abroad do not see their friends for many years? Moreover, to my mind all insane sailors and soldiers should be accepted as "Service patients" from the commencement of the attack and quite irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. There must be no inquiry into antecedents. The country has enlisted and made use of these men in its defence, and there ought to be no discrimination in order to avoid responsibility. Are such sophistries and refinements hold in the "Workmen's Compensation Act." If all insane sailors and soldiers are not classed prior to admission to an asylum as "Service patients" irrespective of family history, former attacks of insanity, insanity due to syphilis, epilepsy, &c., there is bound to be further agitation and trouble.

Again I say the Government should give a clear pronouncement on these points.

I am, Sir, yours faithfully,

JAMES F. GEMMEL.

THE TREATMENT OF ENURESIS.

To the Editor of THE LANCET.

SIR,—Any addition to our present methods of treatment of this distressing complaint is of value to the medical profession. I should like to be permitted to state that, following the advice of my friend, Dr. R. C. Mullins, of Durban, I have successfully dealt with, in the Genito-Urinary Department of Guy's Hospital, a fair number of cases by a very simple form of treatment, of which I had not heard previously to 1914; also I have not found anyone who was familiar with it since that year, although, doubtless, many of your readers have tried it. The method consists in the insertion of a catheter into the bladder, and running fluid slowly through into that organ, at a very low pressure. At first only that amount of fluid which the patient can tolerate (say three ounces) is inserted. The fluid injection is repeated after a short interval, and withdrawal of the fluid already inserted, but a very small increase in amount is permitted. This is repeated three or four times with gradually increasing quantities of fluid. It is found that the patient can tolerate slight increases. The treatment is carried on over a period of a week or ten days, until a quantity of fluid amounting to 10 ounces can be retained by the patient. The fluid injected is boracic lotion at a temperature of 100° F.

The essential points of the treatment are: (1) The passage of a clean catheter; (2) the injection in gradually increasing quantities of a mild antiseptic, at a little above body temperature and at a very low pressure. The bladder is thus trained to hold more fluid than it has previously done. All the patients upon whom I have tried this treatment, at whatever age, have very much improved in their power of retention, wherefore I have decided to put the method on record.—I am, Sir, yours faithfully,

A. R. THOMPSON,
Surgeon in Charge of the Genito-Urinary Department, Guy's Hospital.
Wimpole-street, W., Oct. 8th, 1917.

QUININE THERAPY AND HYDROTHERAPY IN THE TREATMENT OF MALARIA.

To the Editor of THE LANCET.

SIR,—Though the therapeutic value of quinine in severe malarial infections seems at the present time to be held in less confident esteem than formerly, the potency of this drug in affording relief from urgent symptoms in the considerable number of such cases which I was recently called upon to treat was a revelation to one who, like myself, has had no such previous experience, and as proficiency was gained in its use and administration, urgent symptoms, especially those of cerebral type, no longer gave rise to the keen anxiety that they at first occasioned. On the other hand, as has been frequently noted by other observers, it was essentially in those persons in whom the disease became dormant, with only occasional exacerbations, that quinine proved to be less efficacious, which may have been due to the fact that these patients did not receive the massive dosage that was accorded to those in whom such urgent symptoms were present; for in order to procure good results it is, in my experience, essential that the drug be used with no sparing hand, and essential too, of course, that after administration it shall be absorbed.

Oral administration is not dependable. In the first place, a large dose of quinine in mixture is very nasty; and, such is the weakness of human nature, that patients will sometimes throw away a dose which they pretend to have taken. Secondly, when swallowed, it is quite uncertain at what rate it will enter the blood stream, a factor that must vary considerably in different individuals. In many patients an extraordinarily thick white furring of the tongue develops as soon as they begin to take quinine mixture, and in them it is unlikely that the process of absorption goes on satisfactorily or completely; whilst if exhibited in the form of compressed tablets the drug may never be absorbed at all. Thirdly, in addition to those effects that are desired, other undesirable effects are sometimes produced which may lower the patient's resistance towards other diseases, and especially, one would think, towards any intestinal infections that may be prevalent. From personal experience it is certain that an acute diarrhœa may be set up after taking no larger dose than 10 grains of the sulphate; for I could reckon on a night of colic with nine or ten watery motions after taking such a dose of quinine the previous evening, for supposedly prophylactic purposes.

In severe cases, therefore, the drug should be given by injection. For this line of treatment the intravenous route is, no doubt, the most certainly efficient; but this method is also not unattended by disadvantages, and the results of intramuscular injection were so satisfactory that it seemed unwise to discard this latter in favour of any other method. 15 or 20 grains of the bi-hydrochloride were usually given at

the commencement of treatment, which dose was repeated in the course of a few hours when coma or other urgent symptoms were present, and under continued energetic treatment even the apparently most desperate cases recovered. For instance, I had a man in my wards who lay in deep and stertorous coma for over 36 hours and who ultimately made a good recovery under large doses of quinine bi-hydrochloride given in this way, 90 grains being administered in 24 hours. This is a large dose and one that I personally never exceeded; but I have been shown cases in a foreign hospital where the maximum daily dose was 8 grammes (120 grains) given by intravenous injection, and the responsible medical officer in charge was himself a resident of a highly malarious country and possessed a wide experience in the treatment of the disease. It would be interesting to know whether, when such doses have been constantly employed, anything other than good results have been obtained in severe cases of malaria.

But by no means all cases of malaria are severe, and there are malarious countries where other means of treatment are also resorted to. I have seen a peasant with a temperature of 104° F., who was suffering from both malaria and dysentery, standing to sluice his head and chest with cold water, although he was almost too weak to crawl out of bed at all; and others, too ill to rise, have called out daily for the same thing. This belief in the efficacy of cold water is doubtless the result of experience and of the teaching of Priessnitz and his followers during the first half of last century, but it is not merely a local doctrine; for at the time that I found these peasants applying this line of treatment for themselves it was interesting to read in THE LANCET (1916) reports of successful hydrotherapeutic measures in the treatment of malaria in Switzerland. Possibly it is precisely those cases with latent infections, in which, as already stated, quinine alone gives such disappointing results, that derive benefit from treatment by baths of various kinds. If hydrotherapy has any influence at all, and there must be few who would deny that it has, it is surely to be expected that this would be demonstrated in just such a condition, in which liver, spleen, and other internal organs form the resting place for the infecting organism, which is ready to reassert itself whenever general conditions may be favourable for it to do so.

For such a line of treatment, and especially at the present time, it may fairly be claimed that Torquay is peculiarly adapted, both by reason of its distinctive situation and on account of the thoroughly complete and up-to-date bathing establishment that has lately been installed by the authorities, in which all baths and douches—hot and cold, local and general—can be administered with either salt water or with the exceptionally soft water from Dartmoor.

I am, Sir, yours faithfully,

A. E. CARVER,
Late temporary Lieutenant R.A.M.C.

Torquay, Oct. 16th, 1917.

THE ANNUAL MEETING OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—The Society of Members of the Royal College of Surgeons of England addressed a letter to the Council of the Royal College of Surgeons of England respectfully suggesting that, in view of the present great pressure on the time and money of medical men at home, and the absence of so many of our members abroad on His Majesty's service, the annual meeting of Fellows and Members at the College should not be held this year, the Society reserving its advocacy of the cause of the Members for future suitable occasions. This suggestion was considered at a meeting of the Council of the College on Oct. 11th, when it was decided to proceed with preparations for the annual meeting on the usual lines.

We think that this decision is regrettable, as many Members will be unable to attend, while the expenses associated with the meeting might have been saved to the College funds.

I am, Sir, yours faithfully,

SIDNEY C. LAWRENCE,
Honorary Secretary, Society of Members of the Royal College of Surgeons of England.

Oct. 14th, 1917

SPIRAL FIELDS OF VISION AND NEURASTHENIA.

To the Editor of THE LANCET.

SIR,—Your review of Jones and Llewellyn's book on "Malingering," in your issue of August 4th, raises an interesting point regarding helicoid curves in the chapter on the eye, contributed by me. For while I have attributed spiral fields of vision to neurasthenia and not to hysteria, your reviewer believes that the converse is usually taught. The helicoid appearance is, I think, universally considered to be due to the abnormally quickly induced fatigue typical of neurasthenic subjects. I do not dispute the statement that helicoid fields were first observed in hysteria, but it is well recognised that neurasthenia may be associated with hysteria, and the peculiar field may, with plausibility, be referred to the neurasthenic element. I think all authorities agree that if suggestibility be the salient feature of hysteria, "fatigability" is the core of neurasthenia, and therefore a fatigue field is more characteristic of the latter syndrome.

I am, Sir, yours faithfully,

Bath, Oct. 13th, 1917. W. M. BEAUMONT.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

P. Macarthur to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Surg.-Gen. R. H. S. Sawyer, C.M.G., is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

Lieut.-Col. H. G. Barling, C.B., R.A.M.C., T.F., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

T. B. Futcher, C.A.M.C., to be temporary Lieutenant-Colonel.

Temp. Major C. Brown, Canadian Army Dental Corps, to be temporary Lieutenant-Colonel while specially employed.

Temp. Hon. Major E. W. White to be temporary honorary Lieutenant-Colonel.

Temp. Hon. Lieut.-Col. L. C. Parkes (Major, R.A.M.C., T.F.) relinquishes his temporary honorary rank.

Lieut.-Col. T. E. Sandall, Lincolnshire Regiment, T.F., to be temporary Lieutenant-Colonel.

Capt. E. D. Caddell and Major B. H. V. Dunbar, D.S.O., relinquish the acting rank of Lieutenant-Colonel on reposting.

Temp. Major G. J. Boyce, C.A.M.C., to be acting Lieutenant-Colonel.

Temp. Major (Capt., R.A.M.C. T.F.) F. A. Hepworth relinquishes his temporary rank on reposting.

Temp. Capts. (C.A.M.C.) G. W. Treleeven and S. G. Ross to be acting Majors.

Temp. Capt. F. F. Middleweek to be temporary Major whilst commanding troops on a hospital ship.

Temp. Hon. Lieut. Sir F. M. Farmer to be temporary Honorary Major.

B. Lyons to be temporary Captain.

Temporary Lieutenants to be temporary Captains: R. T. Worthington, V. Colmer, F. J. Colling, A. G. Gilchrist, G. E. Lloyd, J. Bradley-Hughes, F. W. Harrowell.

H. H. Scott, late temporary Captain, is granted the honorary rank of Captain.

A. Renshaw to be temporary Honorary Captain whilst employed with the Welsh Hospital, Netley.

R. Gellatly to be temporary Lieutenant whilst serving at the Huddersfield War Hospital.

To be temporary Lieutenants: R. Edridge, A. J. B. Leckie, J. Crean, H. McC. Fleming, A. F. Miller, W. McQuiban, T. F. Ryan, F. P. B. MacTavish, E. W. Goble, J. G. Lessey, J. McNamara, J. Magner, W. Lovell, W. Murphy, P. D. Maclean, R. W. H. Meredith, W. H. C. Patrick, H. E. Alexander, K. H. Dyke, A. H. L. Thomas, S. M. Green, R. T. Edwards, S. W. Matthews, D. Wardrop, J. B. C. Brockwell, A. B. Fearnley, J. C. D. Allan, W. Bain.

A. C. Delacroix to be temporary Honorary Lieutenant.

Officers relinquishing their commissions:—Temporary Captains D. McD. Wilson, T. Redmayne, R. H. L. O'Callaghan, T. R. Davey (on account of ill-health), P. M. Turnbull, F. G. Martin (granted honorary rank of Captain). Temporary Lieutenants: K. B. Allan, J. Pugh.

Temp. Capt. W. J. Bell, C.A.M.C., resigns his temporary commission.

SPECIAL RESERVE OF OFFICERS.

Capt. W. H. L. McCarthy relinquishes the acting rank of Lieutenant-Colonel on reposting.

Capt. W. McCombie to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Lieutenents to be Captains: F. M. Rorie, J. A. W. Cullen.

To be Lieutenants: Second Lieutenant G. R. Sharp (from Unattached List, T.F.), D. E. Hearn (from Durham University Contingent O.T.C.).

TERRITORIAL FORCE.

Capt. W. B. Keith is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services, and Capt. R. C. Cannev is seconded for duty with a General Hospital.

Capt. (temp. Major) W. S. Colman relinquishes his temporary rank and is restored to the Establishment.

W. J. Smyth (late Surgeon Captain, A.M.S.) to be temporary Major Hampshire Medical Volunteer Corps.

S. P. Matthews to be temporary Lieutenant and Medical Officer, 8th Battalion Sussex Volunteer Regiment.

...IRAL FIELDS OF VISION ... NEURASTHENIA.

To the Editor of THE LANCET.

SIR,—Your review of Jones and Llewelyn Ma...ngering," in your issue of August 4th ... interesting point regarding helicoid curves ... the eye contributed by me. For while I un... ...ctive fields of vision to neurasthenia and ... ...r reviewer believes that the converse is ... ...e normal appearance is, I think, universa... ...e due to the abnormally quickly induced ... ...neurasthenic subjects. I do not dispute ... ...that contracted fields were first observed in neur... ...we recognised that neurasthenia may be ass... ...criteria, and the peculiar field may, with ... ...referred to the neurasthenic element. I think ... ...assume that if suggestibility be the salient feat... ...failure in it" is the core of neurasthenia an... ...fatigue and is more characteristic of the latter ...

I am, Sir, yours faithfully,

W. M. ...

Bath, Oct. 17th, 1917.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE

P. Macaulay to be temporary Surgeon.

ARMY MEDICAL SERVICE

Surg.-Gen. R. H. ... Sawyer, C.M.G., is retained ... ...for the purposes of Articles 120 and 122, Royal Wa... ...Dated 1st ... be supernumerary.

Lieut.-Col. H. G. Barling, I.B., R.A.M.C., T.F., ...

ROYAL ARMY MEDICAL CORPS

T. B. ... Fletcher, C.A.M.C., to be temporary Lieutenant-... Temp. Major C. Bruce, Canadian Army Dental Co... ...rank Lieutenant-Colonel while specially employed.

Temp. Hon. Major R. W. White to be temporary ... ...rank.

Temp. Hon. Lieut.-Col. L. C. Parkes, M.C., ...temporary rank.

... E. Hamlin, Lincolnshire Regiment, ...temporary rank.

Lieut.-Colonel and Major B. H. V. Dashwood, ...D.S.O., to be Lieutenant-Colonel on regaining ... ...rank of Lieutenant-Colonel on relinquishing ... ...command.

Temp. Major J. Boyce, C.A.M.C., to be acting ... ...Major.

Temp. Capt. R.A.M.C. (T.F.) F. A. Hepple, ...temporary rank.

Temp. Capts. C.A.M.C. G. W. Treleaven and ... ...temporary rank.

Temp. Capt. F. F. Middleweek to be temporary ... ...whilst ... ...a hospital ship.

Temp. Capt. F. M. Farmer to be temporary ... ...Hon. Lieut. and ... ...temporary Captain.

... Lieutenants to be temporary Captains, ...A. G. Gilchrist, ...

... W. Ware, ...Captain, is granted the ...

... Honorary Captain to be temporary Honorary Captain ...

... temporary Lieutenant ...

... Hospital.

... Lieutenants R. Eldridge, A. ...

... A. F. Miller, W. McC. ...

... J. G. Fraser, J. McKay, ...

... W. Wright, P. D. Maclean, R. W. E. ...

... Captain A. H. Dyke, A.H.S., ...

... Lieutenant D. Wardrop, ...

... W. Matthews, W. Rain, ...

... Honorary Lieutenants ...

... their commissions ...

... R. H. L. Oliver, ...

... Lieutenants T. P. M. Turnbull, F. G. Mc... ...Lieutenants ...

... C.A.M.C., resigns on ...

... RESERVE OF OFFICERS.

Capt. W. H. L. McCarthy relinquishes the acting ...

... on regaining ...

Capt. W. McCombie to be acting Lieutenant-Colo... ...command of a Field Ambulance.

Lieutenants to be Captains, F. M. Boyle, J. P. M... ...Lieutenants to be Lieutenants, Second Lieutenant G. E. Shee... ...Second Lieutenant Durham University ...

Lieut. T. F. D. E. Hearn from Durham University ...

TERRITORIAL FORCE.

Capt. W. B. Keith is seconded whilst holding ... ...Deputy Assistant Director of Medical Services, and ... ...seconded for duty with a General Hospital.

Capt. (temp. Major) W. S. Colman relinquishes ... ...and is restored to the Establishment.

... with rank Surgeon-Captain, A.M.S., ...

... Yorkshire Medical Volunteer Corps.

... Matthews to be temporary Lieutenant ... ...Volunteer Regiment.

J. G. Miller (late Captain, R.A.M.C.) to be temporary Second Lieutenant, 4th Battalion Northumberland Volunteer Regiment.

R. A. Walter to be temporary Lieutenant and Medical Officer, 3rd Battalion Kent Volunteer Regiment.

G. Stowell to be temporary Captain, Lancashire Medical Volunteer Corps.

R. Harrison to be temporary Captain, East Yorkshire Medical Volunteer Corps.

Temp. Capt. and Medical Officer J. Lytle, from 2nd Battalion, Shropshire Volunteer Regiment, Temp. Capt. G. Hollies, from 1st Battalion, Shropshire Volunteer Regiment, and H. C. Woodhouse to be temporary Captains, Shropshire Medical Volunteer Corps.

Temp. Capt. and Medical Officer E. Quayle, from 2nd Battalion, Lancashire Volunteer Regiment, to be temporary Major, Lancashire Medical Volunteer Corps.

A. Linnell to be temporary Captain, Northamptonshire Medical Volunteer Corps.

W. A. Warters to be temporary Lieutenant and Medical Officer, 8th Battalion, Derbyshire Volunteer Regiment.

R. F. H. Newton to be temporary Lieutenant and Medical Officer, 7th Sussex Volunteer Regiment.

E. W. Archer (late Captain, R.A.M.C.) to be temporary Captain and Medical Officer, 2/3rd Battalion, East Riding Volunteer Regiment.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the September number of this journal Mr. R. E. Savage, protozoologist attached to the Royal Army Medical Corps, publishes a report on the treatment of 59 cases of *Entamœba histolytica* infection, to which Captain J. R. Young contributes some clinical remarks. Most of the cases dealt with acquired their infection in Mesopotamia, Salonika, or Egypt, but some had their first attack on Gallipoli in the winter of 1915. Thirty-seven of the cases were cyst carriers, while 22 were acute cases. The results of five different courses of treatment with emetine, emetine with pulv. ipecacuanhæ, and emetine bismuth iodide are described. A joint paper by Captain T. J. Mackie and Captain H. G. Wiltshire discusses the diagnostic interpretation of the agglutination test in typhoid and paratyphoid infection occurring among typhoid vaccinated troops, and Mr. H. M. Woodcock, D.Sc., of the Lister Institute of Preventive Medicine, gives the result of some protozoological experiences during the summer and autumn of 1916. Other articles are the Intravenous Administration of Quinine Bihydrochloride in Malaria and a Remark upon the Form of the Parasite Responsible for Relapses (War Office Investigations), by Lieutenant-Colonel S. P. James, I.M.S., and Methods Employed in the X Ray Department of a Military Hospital, with a Few Notes on One or Two Cases of Interest, and on the Treatment of Trench Foot Adopted There, by Dr. Russell J. Reynolds. Colonel R. H. Firth again reverts to his enjoyable "Some Musings of an Idle Man."

URBAN VITAL STATISTICS.

(Week ended Oct. 13th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·8, against 10·8 and 11·1 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·0, or 0·5 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·6 in Acton, 6·2 in Edmonton, and 6·4 in Rochdale, to 19·0 in Cambridge, 19·9 in Middlesbrough, and 21·9 in Stockton-on Tees. The principal epidemic diseases caused 381 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 243 from infantile diarrhœa, 54 from diphtheria, 34 from whooping-cough, 30 from measles, 14 from enteric fever, and 6 from scarlet fever. The deaths from diarrhœa, which had been 344, 267, and 273 in the three preceding weeks, fell to 243 last week, and included 48 in London, 18 in Sheffield, 15 in Hull, and 13 in Middlesbrough. The 924 cases of scarlet fever and 1271 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 71 and 105 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 120 resulted from violence. The causes of 37 deaths were uncertified, of which 11 were registered in Birmingham and 3 in Darlington.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·8, against 11·9 and 10·7 in the two preceding weeks. The 250 deaths in Glasgow corresponded to an annual rate of 11·7 per 1000, and included 10 from infantile diarrhœa, 7 from measles, 7 from whooping-cough, 3 from diphtheria, and 2 from scarlet fever. The 67 deaths in Edinburgh were equal to a rate of 10·5 per 1000, and included 2 from diphtheria, 2 from infantile diarrhœa, and 1 from measles.

Irish Towns.—The 121 deaths in Dublin corresponded to an annual rate of 15·8 per 1000, or 4·3 above that recorded in the previous week, and included 9 from infantile diarrhœa, 3 from diphtheria, and 1 each from enteric fever and measles. The 87 deaths in Belfast were equal to a rate of 11·5 per 1000, and included 5 from infantile diarrhœa, 1 from enteric fever, and 1 from diphtheria.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—The Guild has undertaken to administer a fund raised by the friends of the late Mrs. John Phillips as a memorial to her work in aiding necessitous families of the medical profession. A sum exceeding £500 has already been raised for an exhibition, and further subscriptions may be sent to the honorary treasurer, Mrs. Muir, "Yellow Wood," Weybridge. A sum of £368 has also been allocated to the Guild by the friends and patients of the late Dr. L. Vernon Jones. The annual income of both funds will be used for the education of children of those who are beneficiaries of the Benevolent Fund.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Temp. Capt. W. T. Chaning-Pearce, R.A.M.C., attached Liverpool Regiment, was educated at Cambridge and at Guy's Hospital, London, and qualified in 1911. He held appointments at Guy's, at the London Hospital, and at the Croydon General Hospital, and was in practice at Ramsgate before joining up.

Capt. K. T. Limbery, R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified at the beginning of 1916. He joined up shortly afterwards.

Capt. W. D. Reid, M.C., R.A.M.C., attached Manchester Regiment, qualified at Edinburgh in 1910. The award of the M.C. was recorded in THE LANCET of March 10th, 1917, p. 392.

Capt. N. H. W. Saw, M.C., R.A.M.C., attached Worcestershire Regiment, was a student at Guy's Hospital, London, and qualified early in 1915, joining up shortly afterwards. The award of the M.C. was recorded in THE LANCET of Sept. 30th, 1916, p. 621.

Capt. J. H. C. Gatchell, R.A.M.C., attached Royal Sussex Regiment, qualified at Dublin in 1912, and was in practice at Dunamanagh, co. Tyrone, prior to joining the R.A.M.C.

Capt. A. G. Whitehorne-Cole, R.A.M.C., was a student at St. Mary's Hospital, London, and qualified in 1906. He held appointments at the Cancer Hospital and at St. Mark's Hospital, London, and contributed several papers to medical literature. He was in practice in New Cavendish-street, London, before joining the R.A.M.C.

Died of Wounds.

Capt. J. J. P. Charles, R.A.M.C., attached Herts Regt., qualified at Edinburgh in 1909, and held appointments at the London Lock Hospital and at the Norfolk and Norwich Hospital. He was in practice at Swanage before joining the R.A.M.C. in August, 1914.

Capt. L. Oldershaw, R.A.M.C., attached Manchester Regiment, was educated at Liverpool University and qualified in 1915, joining up shortly afterwards.

Wounded.

Lieut. E. H. R. Altounyan, R.A.M.C., attd. London Rifles.
Capt. W. McM. Chesney, M.C., R.A.M.C.
Capt. A. Morris, R.A.M.C.
Capt. S. J. Simpson, R.A.M.C.
Capt. W. F. Wilson, M.C., R.A.M.C., attd. Royal Fusiliers.
Lieut. G. S. Lawrence, R.A.M.C.
Staff-Surgeon E. L. Atkinson, R.N.
Capt. A. R. Grant, R.A.M.C.
Capt. W. McConnell, R.A.M.C., attached Royal Fusiliers.
Major J. S. Y. Rogers, R.A.M.C.
Lieut. R. C. Rogers, R.A.M.C., attached R.G.A.
Capt. A. E. Mackenzie, R.A.M.C., attached Royal West Surrey Regiment.
Capt. W. F. Young, R.A.M.C.
Capt. T. B. Brandon, R.A.M.C.
Capt. F. E. Johnson, R.A.M.C.
Capt. F. P. Grove, R.A.M.C., attd. Royal Welsh Fusiliers.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Brigadier-General D. E. Cayley, C.M.G., wounded, son of the late Deputy-Surgeon-General H. Cayley, C.M.G.
Temp. Capt. W. T. Chaning-Pearce, R.A.M.C., killed in action, third son of Dr. J. Chaning-Pearce, of Ramsgate.
Capt. H. S. Chalmers, Royal Field Artillery, died of wounds, second son of Dr. A. K. Chalmers, of Glasgow.
Capt. L. A. L. Fink, M.C., Bedfordshire Regiment, killed in action, son of Major G. H. Fink, I.M.S. (ret.), of Finchley, London.
Second Lieut. H. W. Fleming, Bedfordshire Regiment, killed in action, second son of the late Dr. A. J. Fleming, of Hampstead, London.
Capt. J. J. P. Charles, R.A.M.C., died of wounds, son of the late Professor Charles, of Queen's University, Cork.
Second Lieut. D. Heald, Rifle Brigade, died of wounds, only surviving son of Dr. H. Heald, of Ormskirk.
Second Lieut. S. W. Wayte, M.C., Royal Field Artillery died of wounds, younger son of Dr. J. Wayte, of Croydon.
Capt. A. A. Clarke, M.C., Leicestershire Regiment, killed in action, only son of the late Dr. A. Clarke, of Morley, Yorks.

Second Lieut. T. G. de Denne, Devon Regiment, killed in action, youngest son of Dr. T. V. de Denne, of Sidmouth, Devon.
Capt. B. W. Conway, Manchester Regiment, killed in action, eldest son of Dr. B. W. Conway, of Longsight, Manchester.
Second Lieut. J. M. Blake, Devon Regt., killed in action, son of the late Dr. M. D. Blake, of Grantchester, Cambridge.

MINISTRY OF NATIONAL SERVICE: ITS MEDICAL ORGANISATION.

The details of the organisation of the medical department of the Ministry of National Service have now been made public, and follow exactly upon the lines laid down by Sir Auckland Geddes in his recent speech at Nottingham, which we published last week. The Chief Commissioner of Medical Services with direct responsibility to the Minister is Dr. James Galloway, whose duties are to organise and administer the medical service of the Ministry.

Regions and Medical Commissioners.

The regions into which the country has been divided for the purpose of making a medical survey of the male population of military age are as follows:—

1. *Northern*, comprising Northumberland, Durham, Cumberland, Westmorland.
2. *North-Western*, comprising Lancashire and Cheshire. Commissioner: Dr. G. Redmayne Murray.
3. *Yorks and East Midland*, comprising Yorkshire, Lincolnshire, Nottingham, Derby, Leicester, Northampton, Rutland. Commissioner: Dr. T. Wardrop Griffith.
4. *West Midland*, comprising Stafford, Warwick, Worcester, Hereford, Shropshire. Commissioner: Colonel W. H. Bull.
5. *Wales*. Commissioner: Dr. W. Bickerton Edwards.
6. *South-Western*, comprising Gloucester, Wilts, Somerset, Dorset, Devonshire, Cornwall. Commissioner: Sir James Porter.
7. *East Anglia*, comprising Norfolk, Suffolk, Essex, Cambridge, Huntingdon, Bedford, Bucks, Oxford, Berks, Herts. Commissioner: Dr. W. Hale White.
8. *South-Eastern*, comprising Kent, Sussex, Hants, Surrey. Commissioner: Sir Charles Bedford.
9. *London*. Commissioner: Colonel C. R. Tyrrell.
10. *Scotland*. Commissioner: Dr. Norman Walker.

The Medical Boards.

One or more medical boards will be established in each recruiting area into which the regions are divided. The number of these boards is to be about one hundred, and the following places have been mentioned:—

London Region.—North London, West London, South London, East London, Woolwich, Wandsworth, Wood Green, Hounslow, Holloway, White City, Camberwell, Stratford, Croydon.

West Midland Region.—Stoke-on-Trent, Birmingham, Worcester, Hereford, Wolverhampton, Shrewsbury, Warwick, Lichfield (Stafford).

South-Eastern Region.—Brighton, Canterbury, Guildford, Maidstone, Southampton.

South-Western Region.—Plymouth, Bristol City, Gloucester, Dorchester, Exeter, Taunton, Trowbridge. Truro.

East Anglian Region.—Chelmsford, Oxford, Cambridge, Bedford, Huntingdon, Norwich, Ipswich, Aylesbury, Hertford, Reading.

Northern Region.—Sunderland, Middlesbrough, Newcastle, Carlisle.

North-Western Region.—Manchester, Lancaster, Ashton-under-Lyne, Warrington, Liverpool, Bury, Preston, Blackburn, Chester.

Yorks and East Midland Region.—Derby, Leicester, Sheffield, Pontefract, Bradford, Northallerton, Hull, Nottingham, Lincoln, Leeds, Barnsley, York, Halifax, Northampton, Oakham.

Scottish Region.—Glasgow, Dundee, Ayr, Perth, Galashiels, Aberdeen, Edinburgh, Hamilton, Glencorse, Nairn, Stirling, Inverness.

Welsh Region.—Cardiff, Wrexham, Newport, Carmarthen, Brecon.

The new medical boards which come into being on Nov. 1st will each consist of four local practitioners selected by the advisory board on the recommendation of the Statutory Medical War Committees from names furnished to them by the Local Medical War Committees. Medical men who wish to serve are invited to communicate with their local committee, or in the London district direct with the Central Committee. A roster will be chosen of at least double the number of practitioners necessary to compose a board.

Special Opinions and Appeals.

In cases presenting difficulty, such as those of suspected tuberculosis, heart disease, and unusual defects of vision, the presidents of medical boards will be empowered to obtain the opinions of specialists, and it is hoped that the staffs of general and special hospitals throughout the country may be able to render assistance in giving special opinions. In the case of appeals against the result of medical examination the exact mechanism will now be as follows: Three medical assessors, appointed by the Local Government Board, will be attached to the appeal tribunals. Should the appeal tribunal on hearing a case decide that a medical re-examination is desirable, they will forward all the papers bearing on the case to the medical assessors, who will re-examine the man. The decision of the medical assessors will be final as regards the man's physical condition and gradation.

The New Gradations.

We have already defined in general terms the four groups of the new gradation, and can now give them more precisely as follows:—

Grade I. to consist of men who attain the normal standard of health and strength and are capable of the physical exertion suitable to their age.

Grade II. includes those who do not attain the standard of Grade I. from various causes, such as deficient physical development or slight defects, but are yet fit for work of a less strenuous kind. Most of these are capable of improvement by training. Grade I. corresponds to Class A or General Service of the late classification, and Grade II. to classes BI. and CI.—i.e., to garrison duty abroad and at home.

Grade III. includes those who from any cause are not suitable to undergo military training as combatants, although they may be quite fit for one of the auxiliary Services connected with the Army, and fit also for the work on which they are already employed or its equivalent.

Grade IV. includes all those who are unfit both for military service and any work of national importance.

Other Functions of the Medical Department.

Another serious function of the medical department of the Ministry will be to consider the supply of students in the medical schools in its bearing upon the future strength of the medical profession and to determine the necessity for bringing back from the Services men who are now serving in a non-medical capacity. We noted last week the personnel of the medical advisory board which will keep in close touch with medical opinion and in coöperation with existing organisations. To the names there given should now be added that of Mr. Percy Edwards, of Liverpool.

Manual of Medical Standards.

In the manual of general directions for the guidance of medical boards, which is now nearly ready, a scheme is outlined by which every man is seen by each member of the medical board at some stage of his examination, while his final gradation is settled by the consensus of opinion of the members and president. This procedure will meet the complaints which have been made in the past that the president omits to consult the opinion of his board or overrules their decision. The scheme continues:—

When a man wishes to appeal against the gradation of the medical board he must lodge his appeal within five clear days of his examination, and will forward in duplicate any medical certificates he may wish to place before the tribunal. If the appeal tribunal after hearing the case decides that the claim is one in which they think medical re-examination is desirable, they will forward all the documents bearing on the case to the medical assessors appointed by the Local Government Board, accompanied by the appeal tribunal's recommendation that the man should be re-examined. The medical assessors will inform the man of the date on which he should present himself for re-examination, giving at least three clear days' notice. A representative of the medical board which graded the man will be present at the meeting of the medical assessors of the appeal tribunal, if they desire it, in order to supply any information which may be required. The medical assessors will communicate their decision to the chairman of the appeal tribunal, who will then make arrangements for the final adjustment of the man's case. The medical assessors will also give the man a card (known as 3291) showing the grade in which they have placed him.

Questions of principle in the gradation of men suffering from certain disabilities which cannot be decided by reference

to the manual may be stated in writing by the board or assessors concerned and referred to the Ministry, when the matter will be placed before the advisory board of the medical department for an opinion. It will also be within the power of the Ministry to refer such questions to medical men competent to decide on the particular subject.

ITALY AND THE WAR.

We have received from our Correspondent at the Italian front the following medical notes:—

British Hospital at the Italian Front.—During his recent tour of the Italian front Lord Derby paid a visit to the British Military Hospital, which, in the hands of the Italian army engineers, is arising with marvellous rapidity in the orchard of a farmhouse in a small Austrian village. In the original house are the offices, small wards and wards for sick officers; the main accommodation is in long two-storey buildings of brick and cement, each block containing two wards, one above the other. The operating theatre, with anæsthetising and sterilising rooms, forms a separate building, and there are also a cook-house, a laundry, and a bath-house, with shower baths and small bathrooms. The British Red Cross Society, which has rendered invaluable help in the equipment of the hospital, was represented on the occasion of this visit by its Chief Commissioner for Italy, Lord Monson. The Secretary of State for War made a round of the wards and expressed his complete satisfaction with all the arrangements.

The Medical Services at the Front.—The number of convenient buildings and the excellent state of the roads have been big factors in the medical arrangements for the Army on this front. Field hospitals are established everywhere in the buildings, and everywhere communications are easy by good roads with plenty of motor transport. Such conditions would seem ideal, and should lead to ideal results as the organisation allowed. But at present there is over too much evacuating from one field hospital to another a few miles further back, with the result that during an offensive all are overcrowded and overworked with the constant stream of wounded, and the latter are apt to get inefficient attention. It is often several days, with a brief stay in as many hospitals, before the originally lightly wounded case at last arrives where his wound can be definitely dressed. By now the simple injury may have become seriously infected; an unnecessarily long stay in hospital is ensured and a corresponding economic loss to the country. It should not be difficult with the amount of motor transport at command to send all but the severely wounded direct from the ambulances to the base hospital, a journey by road of from two to three hours at most, and so leave the advanced hospitals free to deal with the serious cases and keep them as long as needful. Distinguished civilian surgeons have been instant in urging this reform, but at present without success. Wounds of the abdomen, thorax, and cranial cavity, however, are treated in special advanced surgical hospitals under the charge of skilled surgeons, and here the system seems wonderfully perfect under war conditions. The treatment of sickness is very well organised, especially as regards infective maladies, under which category is included diarrhœa. These cases are all sent to special hospitals with ample accommodation in the war zone. The protection of the rest of the country is strictly cared for. All sick are sent to isolation hospitals, where they are bacteriologically certified free from infection before they can leave the zone of war for their homes or territorial hospitals. With the excellent state of health prevailing this year among the troops at the front this seems almost an unnecessary precaution, yet it guarantees the country from epidemic disease and is rendered the more advisable on account of the frequency of disease among the Austrian prisoners, who are all disinfected and bacteriologically examined in the prisoners' concentration camps before being sent to the interior. Over 60 bacteriological laboratories are thus employed in the war area.

Trachoma and Tuberculosis.—The spread of these diseases is seriously occupying the attention of the profession of this country. Before the war men suffering from trachoma and its after-effects were not taken for military service, and rejection for this cause alone reached the number of 31 per cent. in Sicily. After the outbreak of war, however, this regulation was no longer enforced, and very shortly it was discovered that the disease was spreading seriously in the Army. An order was at once issued that all such cases should be sent to their homes, with two deplorable results—a great spread of the contagion wilfully among the troops and an involuntary spread among the civilian population. With regard to tuberculosis, here, as probably elsewhere, there is a want of unity in the ideas which govern the medical officers in accepting or rejecting possible cases. Professor Edoardo Maragliano, who speaks with acknowledged authority upon the disease, draws attention to this confusion in an article in the *Giornale di Medicina Militare*, and declares that the sole question before the examining medical officer is whether the man is infected with tuberculosis or not. If the answer is Yes, he must be rejected for the Army, however good his health may seem, for no doctor can guarantee that he has sufficient resistance for the successful endurance of a soldier's life, either within or behind the zone of war. He should not be classified as fit for certain military duties. Both the nation and the Government desire to have no tuberculous subject in the Army; the doctor who rigorously rejects them is rendering a service to the Army to-day and to the country to-morrow.

October, 1917.

MR. FRANCIS DODD'S PORTRAITS.—The leaders of our Navy and Army are being excellently drawn in colours by Mr. Francis Dodd, the examples which have reached us being Sir Douglas Haig, General Smuts, Admiral Sir John Jellicoe, and Admiral Beatty. The reproductions of these portraits can be obtained from *Country Life*, Tavistock-street, London, W.C., at 2*s*. 6*d*. each. They are on a large though not a uniform scale, and are mounted for framing with real good taste.

LEAGUE OF MERCY WAR BAZAAR.—As already announced, the League of Mercy has organised a bazaar to be held at the Ritz Hotel on Wednesday and Thursday next in aid of the voluntary hospitals. Princess Alice, Countess of Athlone, will open the bazaar on the first day and Princess Patricia of Connaught on the second. The bazaar will be opened each day at 2.30 P.M. and the prices for the opening ceremonies will be 10*s*. and 5*s*. respectively. After the opening ceremonies 5*s* will be charged on the first day and 2*s*. 6*d*. on the second and from 5 to 7 P.M. on the second day 1*s*. Tickets may be obtained at the doors or from Mr. W. and Miss Andrews, honorary organising secretaries, 5, Belsize-park, N.W. 3, and Mr. R. M. F. Robertson, 70, Queen Victoria-street, E.C. 4.

PURE WHEATEN FLOUR FOR INVALIDS.

THE following is the official Memorandum on permits for the use of pure wheaten flour for invalids issued by the Ministry of Food after consultation with the War Bread Medical Subcommittee of the Royal Society. The Memorandum was required, as some misunderstanding appears to exist as to the granting of permits to use white flour; it is wise, therefore, to indicate the procedure adopted in dealing with applications. These are considered in the first instance by the scientific adviser to the Food Controller acting under the guidance of the War Bread Medical Subcommittee of the Royal Society. After this first sitting of applications doubtful cases are referred to certain members of the subcommittee who have agreed to act as referees, or they are laid before the whole subcommittee. It should be understood that applications are becoming so numerous and the necessity for economising wheat so imperative that it is not possible to accede to all the requests sent in. The committee is of opinion that in many cases no substantial grounds exist for the applications, which appear to be made merely to satisfy some whim of the patient and not because the Government regulation flour has been found to be deleterious. Speaking generally, it may be said that unless some affection of the digestive organs which in the opinion of the War Bread Medical Subcommittee justifies the use of pure wheaten flour is present, an application cannot be granted.

1. *Acute affections of the stomach* (acute gastric catarrh, ulcer in its acute stages, &c.).—In these cases the use of any form of bread whilst the disease is at its height is probably inadmissible. During the convalescent stages the prescription of pure wheaten flour for a limited period may be

permissible if rusks and breakfast biscuits or ordinary bread boiled and sieved, or bread jelly, does not meet the case.

2. *Chronic affections of the stomach.*—In chronic functional disorders of the stomach (which make up the majority of cases of chronic dyspepsia) the use of pure wheaten flour can rarely be allowed for the reason that such cases are so numerous and so protracted in their course that it would be impossible to meet the demand without seriously depleting the wheat-supply of the rest of the population. The use of the present bread, well toasted and thoroughly chewed, or of biscuits and rusks, should be recommended.

In chronic *organic disease* of the stomach (carcinoma and chronic ulcer) white flour may sometimes be advisable if the patient is able to take bread at all.

3. *Acute affections of the intestine* (acute diarrhœa, enteritis, colitis, ulcerative conditions, &c.).—In these cases the same remark applies as in acute affections of the stomach.

4. *Chronic intestinal affections* (chronic diarrhœa, chronic colitis, malignant disease, &c.).—In some of these the use of white flour may be desirable; but evidence would be required to show that ordinary bread, toasted and thoroughly chewed, and the use of other measures have failed to relieve the symptoms.

Cases of disease of the nervous, circulatory, or respiratory systems, or of the urinary organs or skin, or such general conditions as anæmia and diabetes, can rarely be considered suitable for grants.

As regards tuberculosis, there is no evidence that the present bread is injurious. Inquiries have been made from the principal sanatoria for the treatment of this disease, and in the great majority of cases the medical superintendents support the above opinion. No institution for the treatment of this disease is receiving grants of pure wheaten flour.

The conclusion of the subcommittee is that there are very few conditions, in the opinion of the War Bread Medical Subcommittee, in which the use of pure wheaten flour is *essential*. The subcommittee is well aware of the difficult position in which the medical practitioners are placed; but it is necessary to conserve the wheat-supplies of the country, and every means of doing this must be adopted, and, if need be, enforced. Refusal to give a permit does not imply that the medical certificate has been disregarded, but merely that the need of other applicants appeared to be more urgent.

Above all, it is important that no discrimination be made between rich and poor in recommending these grants. Nothing is easier to arouse or more difficult to allay than a suspicion that the poor are denied what the rich find no difficulty in obtaining.

Regarding the war-bread as an ordinary article of diet, the Memorandum states as follows:—

Under war conditions when variety in foods is limited the bread made from G.R. flour is probably a more wholesome article of diet than that made from fine wheaten flour in pre-war times. The flour contains more lime salts than fine wheaten flour, and presumably is therefore more suitable for growing children. It contains a greater variety of proteins which it is important to have, especially if bread enters largely into the dietary. It contains more "germ," which adds to the proteins and increases the fat. It also contains more of the class of substances known as vitamines, about which our knowledge is far from complete, but it is known that a deficiency of these profoundly impairs nutrition. The bread requires to be thoroughly masticated, but if chewed well, or eaten as toast which necessitates chewing, or, finally (in the case of invalids), if it be used as indicated in the preceding paragraph, there are very few people with whom it could disagree.

AN X-RAY INSTALLATION AT WORTHING.—The Worthing Education Committee has decided to purchase and instal at the school clinic an X-ray apparatus mainly for the purpose of the treatment of ringworm. No fewer than 40 cases of ringworm, it was stated at the meeting of the committee, are now excluded from the schools of the town.

SERVICE FOR DOCTORS AND NURSES.—The Vicar of Brighton (the Rev. Prebendary Dormer Pierce) is continuing the custom of holding an annual service for doctors, nurses, and V.A.D. workers, and this was held in the Parish Church at Brighton on Sunday evening last, a large number of medical men, nurses, and ambulance workers attending. The vicar pleaded for close coöperation between priest and doctor. The medical profession was a teacher of benevolence and human pity. Doctors, nurses, and V.A.D. workers were all engaged in the same ministry—the revelation of God as the God of health.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy, held on Oct. 11th and 12th, the following candidates were successful:—

Abraham Abelson, University College Hospital; Robert Geoffrey Addenbrooke, Birmingham University; Esawy Ahmed, London Hospital; John Binford Barnett, Birmingham University; Jules Samuel Boruchowitz, Brussels and University College Hospital; Gerald Arthur Augustine Bradnack, Guy's Hospital; Geoffrey Wright Dando, Birmingham University; Douglas Alexander Dyer, St. George's Hospital; Harland Bernard Easton, St. Mary's Hospital; Frank Edward Edwards, Manchester University; Francis Malcolm Timothy Flintan, Middlesex Hospital; Lydia Susan Fuller-Maitland and Irene Mary Golding, London School of Medicine for Women; Christopher Frank Good, London Hospital; Ernest Alphonse Hardy, Charing Cross Hospital; Geoffrey Gordon Havers, Cambridge University and St. Bartholomew's Hospital; Janet Hughes, King's College; Reginald Jenner-Clarke, London Hospital; John Kendall, Guy's Hospital; Francis Wharton Lemarchand, St. Bartholomew's Hospital; Horace Sharman Le Marquand, St. Thomas's Hospital; Elisabeth Esther McCulloch, Liverpool University; William Dundas Macrae, London Hospital; Guy Meadows, Guy's Hospital; Margaret Ombler Meek, Charing Cross Hospital; Henry Marie Alphonse Menage, St. Bartholomew's Hospital; Edward Nissim, Bombay University and University College Hospital; Geoffrey Noott, Guy's Hospital; Ruth Emerita Pilgrim and Norah Katharine Priestley, London School of Medicine for Women; Henry Christoffers Powell, Charing Cross Hospital; Hubert Llewellyn Pridham, St. Bartholomew's Hospital; Owen Alfred Llewellyn Roberts, St. Mary's Hospital; Arthur Twynham Spoor, Cambridge University and St. Thomas's Hospital; Edward Algernon Weaver, Birmingham University; and Julius Maurice Winnett, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Oct. 11th, Sir George Makins, the President, being in the chair. The President reported the death on July 27th of Dr. Theodor Kocher, of Berne, an Honorary Fellow of the College, and stated that he had written to the widow to express the sympathy and condolence of the Council. A letter was read from Surgeon-General Sir Alfred H. Keogh, G.C.B., expressing his great appreciation of having had the dignity of the Honorary Fellowship of the College conferred on him by the Council. The President reported that Surgeon-General Sir Alfred Keogh had attended that day to receive the Diploma of Honorary Fellowship and to sign the Roll, and that, after this ceremony, Sir Alfred Keogh had declared open the exhibition of War Office specimens of military injuries temporarily installed in Rooms 1 and 2 of the Museum. Three months' leave of absence was granted to the President on Government work. Leave of absence was granted to Sir Berkeley Moynihan from the October and November meetings of the Council during his absence abroad on Government duties. The best thanks of the Council were given to Mr. Alban Doran for his valuable services in continuing to arrange and catalogue the collection of surgical instruments in the Museum. The President reported that in response to the request of the Museum Committee he had authorised the temporary installation of the electric light in Rooms 1 and 2 of the Museum for illuminating the exhibition on dark days. The draft report of the Council to be presented to the annual meeting of Fellows and Members was approved. Mr. Bilson Pollard was re-elected a member of the Committee of Management. Sir George Makins was appointed a member of the Court of the University of Liverpool for three years from Jan. 1st next. The President reported that he had granted the use of the theatre for five lectures in October, to be delivered by Mr. Twort, superintendent of the Brown Animal Sanatory Institution. The President reported that he had given permission for the practical examination in physical anthropology, forming part of the B.Sc. London honours examination in human anatomy and morphology for internal students, to be held at the College on Nov. 1st. There are three candidates.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures and discussions on Public Health Problems Under War and After War Conditions is to be held in the lecture hall of the Institute (37, Russell-square, London W.C. 1) on Wednesdays in October, November, and December, at 4 P.M., as follows:—Oct. 31st: Health Problems and a State Ministry of Health, by Major Waldorf Astor, M.P. Nov. 7th: Woman's Health and Work in War Time, by Mrs. Ogilvie-Gordon, D.Sc.; Nov. 14th: The Problem of the Disabled, by Sir Robert Jones; Nov. 21st: Red Cross Work Under War Conditions, by Sir Arthur Stanley. Dec. 5th: Women Workers and the Health of the Nation, by Miss A. M. Anderson; Dec. 12th: Some Aspects of the Tuberculosis Problem—Treatment and Training of Surgical Tuberculosis Cases, by Mr. Henry J. Gauvain, M.R.C.S. Dec. 19th: Public Health and Alcoholism in Women, by

Lord D'Abernon. The Harben Lectures on the Treatment of Infected Wounds will be given by Dr. Alexis Carrel, of the Rockefeller Institute, New York, on Nov. 26th, 27th, and 28th, at 4 P.M. The principal of the Institute will be in the chair. Medical officers of health, medical practitioners, sanitarians, and others engaged in public health and national services are invited to attend. No tickets of admission are required. Further particulars may be obtained from the Secretary, 37, Russell-square.

THE MINISTRY OF HEALTH.—The Lord Mayor is taking the chair at a National Conference of Sanitary Authorities, convened by the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, to be held at the Mansion House on Monday, Oct. 29th, from 11 A.M., to consider the proposed Ministry of Public Health, with special reference to safeguarding the interests of motherhood and infancy in connexion therewith. Tickets may be obtained, free of charge, on application to the Secretary, 4, Tavistock-square, W.C. 1.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Oct. 10th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

Being in attendance at a confinement the midwife neglected to cleanse the child's eyelids at birth, as required by Rule E. 16; in contravention of Rule E. 12 she neglected to provide for the cleanliness and comfort of patients during her attendance, and failed to give adequate directions to the person entrusted with the duty of washing them. The midwife did not enter her records of pulse and temperature in a note-book or on a chart carefully preserved, as required by Rule E. 14, and did not keep her register of cases as required by Rule E. 24; she neglected to disinfect her hands and forearms before touching the generative organs of the patient, as required by Rule E. 4, and neglected to wash the patient's external parts with soap and water, and to swab them with an efficient antiseptic solution on the occasions required by Rule E. 8, and employed for washing the patient the same water as that in which the child had been washed. The midwife not being scrupulously clean in every way, as required by Rule E. 2, neglecting to take with her to a confinement the appliances and antiseptics required by Rule E. 3, and declining to afford reasonable facilities to the duly appointed officer of the local supervising authority for the purpose of investigating her mode of practice, contrary to the provisions of Rule E. 25. A child suffering from inflammation of and discharge from the eyes, and continuing so to suffer during her attendance, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5); having continued in attendance on the patient after the tenth day, she neglected to note the fact in her register, with the explanation of the reason therefor, as required by Rule E. 12.

MEDICAL SOCIETY OF LONDON.—The next meeting of this society will be held on Monday, Oct. 22nd, at 8.30 P.M., at 11, Chandos-street, Cavendish-square, W., when Mr. Muirhead Little and Major R. C. Elmslie, R.A.M.C. (T.), will introduce a discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation. There will be a practical demonstration with patients and appliances. Colonial and American medical men on active service will be welcomed at the meeting.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The following scholarships, medal, and prizes were awarded during the session 1916-17:—Entrance Scholarships: First, G. B. Shaw; second, E. B. Dancy; third, J. Whitby. Broderip Scholarship, R. E. S. Webb. Lyell Medal and Scholarship and Freeman Scholarship, S. C. Shaw. Hetley Clinical Prize, R. E. S. Webb. Second-year's Exhibition, S. Hillman.

ROYAL SANITARY INSTITUTE.—A meeting under the auspices of this institute will take place in the Council chamber of the Town Hall, Newcastle-on-Tyne, on Nov. 9th, at 7 P.M., when general discussions on Standards of Meat Inspection under War-time and other Conditions and Structure in Municipal Housing will be respectively opened by Mr. Thomas Parker, veterinary officer and inspector of provisions for Newcastle-on-Tyne, and Mr. John Wilson Mole, sanitary inspector and surveyor for the Chester-le-Street rural district council. Dr. Philip Boobbyer will preside. On Nov. 10th a luncheon will be given by the sanitary committee of the corporation, and a visit will be afterwards paid to the Belgian village, Elizabethville, when the planning and structure of the temporary and semi-permanent types of the dwellings will be inspected. Applications for tickets should be made to the honorary general secretary, Dr. Harold Kerr, Health Department, Town Hall, Newcastle-on-Tyne; or to the Secretary of the Institute, 90, Buckingham Palace road, London, S.W., not later than Nov. 2nd.

AT the quarterly meeting of the directors of the Royal Medical Compassionate Fund held on Oct. 16th, Surgeon-General W. H. Norman in the chair, the sum of £1 was distributed among the several applicants.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BIRCH, C., M.R.C.S., L.R.C.P., Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Pangbourne district of the county of Berks.

BUCKLE, ISABEL F., M.R.C.S., L.R.C.P. Lond., House Physician at the South London Hospital for Women.

GETHING, JOHN E., M.B., Ch.B. Liverp., Assistant Medical Officer of the Middleton-in-Wharfedale Sanatorium.

MATHEWSON, J., M.B., B.S. R.U.I., Certifying Surgeon under the Factory and Workshop Acts for the Bromley district of the County of Kent.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

BERMONDSEY TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £500 per annum.

BIRMINGHAM (NEAR), ROMSLEY HILL SANATORIUM.—Assistant Medical Superintendent, unmarried. Salary £350 per annum, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Senior House Surgeon. Salary £300 per annum, with board, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £140 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

DERBY, DERBYSHIRE SANATORIUM FOR TUBERCULOSIS, Walton Lane, near Chesterfield.—Resident Assistant Medical Officer. Salary £360 per annum, with board, &c.

EDINBURGH, CRAIG-LOCKHART POORHOUSE AND HOSPITAL.—Assistant Medical Officer. Salary £250 per annum, with board, &c.

EVELINA HOSPITAL FOR CHILDREN, Southwark, London, S.E.—House Physician and House Surgeon. Salary at rate of £160 per annum, with board, &c.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Haverstock Hill, N.W.—Casualty Officer for six months. Salary at rate of £150 per annum, with board, &c.

LINDSEY (LINCOLNSHIRE), COUNTY OF THE PARTS OF.—Assistant Medical Officer. Salary £400 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

MANCHESTER MATERNITY AND CHILD-WELFARE CENTRES.—Female Medical Officer for Treatment of Children's Diseases. Salary £350 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £150 per annum, with board, &c.

NETLEY, BRITISH RED CROSS HOSPITAL.—Anæsthetist.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, five House Surgeons, two Accident-room House Surgeons, House Surgeon to Aural and Ophthalmic Department, House Surgeon to Gynæcological Department, House Surgeon to Skin and Venereal Department, and House Surgeon to Out-patient Dressing Department. Also Anæsthetist.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon. Salary £200 to £250 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c.

READING, ROYAL BERKSHIRE HOSPITAL.—Honorary Assistant Surgeon.

ROCHDALE INFIRMARY AND DISPENSARY.—Senior House Surgeon and Second House Surgeon. Salaries £400 and £200 per annum respectively, with board, &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer at Lodge Moor Hospital.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £200 per annum, with board, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, &c.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon, unmarried.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Arnesby, Leicester, and at Paignton, Devon.

Births, Marriages, and Deaths.

BIRTHS.

LEGGAT.—On Oct. 5th, at Killiney, Mill Hill, London, N.W., the wife of Captain G. Leggat, R.A.M.C., of twin sons.

MEADE.—On Oct. 12th, at Oak-lane, Bradford, the wife of Dr. N. G. Meade, of a daughter.

POCOCK.—On Oct. 12th, at Greenfields, Newick, Sussex, the wife of Surgeon W. A. Pocock, R.N., of a daughter.

MARRIAGES.

HENDERSON—MACKEEN.—On Sept. 29th, at Harlington Parish Church, Captain Arthur T. Henderson, C.A.M.C., to Frances, daughter of the late Dr. R. H. MacKeen, of Cape Breton.

LANE—PUREFOY.—On Oct. 4th, at St. Lawrence Church, Chapelizod, Samuel Armstrong Lane, Captain, R.A.M.C., to Dorothy Emma Isolda, third daughter of the Rev. and Mrs. Amyrald Dancer Purefoy, the Rectory, Chapelizod.

MACKENZIE—RICE.—On Oct. 13th, at St. John's Church, Blackheath, by the Rev. F. H. Gillingham, Rector of Bermondsey, assisted by the Rev. W. H. Jordan, Curate of St. John's, Colin Mackenzie, M.D. Cantab., F.R.C.S., Captain, R.A.M.C., son of Mr. A. G. Mackenzie, F.I.A., of 29, Chester-terrace, Regent's Park, to Edith Annie, elder daughter of Mr. D. W. Rice, of Shaftesbury.

POWELL—WOOD.—On Oct. 16th, at All Saints', Margaret-street, by the Rev. H. F. B. Mackay, assisted by the Rev. Canon Arnott and the Rev. Edward Arundell, Sir Richard Douglas Powell, Bart., K.C.V.O., M.D., LL.D., D.Sc., second son of the late Captain Powell, Royal Welch Fusiliers, to Edith Mary Burke, younger daughter of the late Mr. and Mrs. Wood, of Cleveland-square, and granddaughter of the late Dr. Charles Burney, Archdeacon of St. Albans.

TROUNCE—QUARTERMAINE.—On Oct. 11th, at All Souls' Church, Langham-place, W., Thomas Reginald Trounce, Captain, R.A.M.C., to May Agnes, second daughter of Mr. and Mrs. J. H. Quartermaine, of Walton, Farnham, Surrey.

DEATHS.

AUCUTT.—On Oct. 9th, killed in action, Donald Aucutt, Captain, Royal Warwickshire Regiment and L.M.S.S.A., aged 24.

BROMHALL.—On Oct. 7th, at Parkfield, St. Trillo's Avenue, Rhos-on-Sea, Ernest Bromhall, M.R.C.S., L.R.C.P., of 132, Radford Boulevard, Nottingham, late of Rawtenstall, Lancashire. Interred at Rhos-on-Sea, 9th inst.

CHANING-PEARCE.—On Oct. 1st, killed in action, Temporary Captain Wilfrid Thomas Chaning-Pearce, M.C., R.A.M.C., M.B., B.C. Camb.

CHARLES.—On Oct. 6th, of wounds received on July 31st, Captain J. J. P. Charles, M.B.

GILMORE-ELLIS.—On Oct. 8th, at Singapore, W. Gilmore-Ellis, M.D., P.C.M.O., Straits Settlements, after operation, aged 57. (By cable.)

REID.—On Oct. 6th, killed in action, Captain W. Douglas Reid, M.C., R.A.M.C., aged 30.

SAW.—On Oct. 9th, killed instantaneously on the battlefield, Captain Noel Humphrey Wykeham Saw, M.C., R.A.M.C., aged 25.

SHERMAN.—On Oct. 10th, died of wounds whilst serving with Field Ambulance, Captain Reginald Sherman, R.A.M.C., M.B. Cantab., M.R.C.S., L.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.

Allen's Commercial Organic Analysis. Fourth edition. Vol. IX. Edited by W. A. Davis, B.Sc., A.C.G.I. With Index for all the Volumes. 30s. net.

Short Account of Explosives. By A. Marshall, A.C.G.I., F.I.C., F.C.S., 5s. net.

FOURNIER, L., 264, Boulevard Saint-Germain, Paris.

Chirurgie de Guerre les Fractures: Déplacements, Séquelles, Décalcifications, Raideurs articulaires consécutives. Par Professeur Edmond Delorme, Médecin Inspecteur Général de l'Armée, ancien Président du Comité technique de Santé Membre de l'Académie de Médecine. Fr.10.

KIMPTON, HENRY, London and Glasgow.

Experimental Pharmacology. By D. E. Jackson, Ph.D., M.D. 20s. net.

W. B. SAUNDERS COMPANY, London and Philadelphia.

Roentgen Diagnosis of Diseases of the Alimentary Canal. By R. D. Carman, M.D. (Mayo Clinic), and Albert Miller, M.D. (Mayo Clinic). 25s. net.

Diagnostic Symptoms in Nervous Diseases. By Edward L. Hunt, M.D., Assistant Professor of Clinical Neurology, College of Physicians and Surgeons, New York City. Second edition, revised. 8s. 6d. net.

The Treatment of War Wounds. By W. W. Keen, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. 7s. 6d. net.

A Manual of Nervous Diseases. By Irving J. Spear, M.D., Professor of Neurology at the University of Maryland, Baltimore. 12s. 6d. net.

Blood Pressure from the Clinical Standpoint. By Francis Ashley Faught, M.D., formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. 15s. net.

The Prevention of Disease: a Popular Book on Keeping Well. By Kenelm Winslow, B.A.S., M.D., formerly Assistant Professor of Comparative Therapeutics at Harvard Medical School. 7s. 6d. net.

1916 Collected Papers of the Mayo Clinic, Rochester, Minn. Cloth, 28s. net.

Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH IN EAST AFRICA.

His Excellency H. Conway Belfield, C.M.G., Governor, has forwarded to the Colonial Office a report on the East Africa Protectorate for the financial year 1915–16. It includes the following particulars respecting the health conditions of the various districts:—

Coast Zone.—The average health remained good throughout the year. There were 7112 cases of malaria treated, with only 14 deaths. There were 6 cases of blackwater fever, and 1 patient, a European, died. 27 cases of cerebro-spinal meningitis occurred, with 12 deaths. There were 317 admissions for dysentery, with 39 deaths; 25 Europeans were treated for the disease, of whom 1 died. 12 cases of enteric fever were treated, of whom 9 were Europeans; there were 5 deaths, 4 being Europeans. No case of plague was reported and no infected rats were found. 41 cases of beri-beri, with 1 death, were noted at Mombasa Native Civil Hospital. 6 cases of small-pox were discovered, of whom 2 died. 436 cases of leprosy were reported from settlements at Mombasa, Malinda, and Lamu.

Mountainous Zone.—The number of admissions for malaria was 5352, a large increase over the number admitted in 1914. Nairobi was responsible for the largest number of cases, but every township appeared in the list. Of 520 Europeans affected 2 died; 9 cases of blackwater fever were treated, 2 being Europeans; 1 death occurred in a native case. The virulence of cerebro-spinal meningitis appears to be dying down. During 1915 there were 3 cases among Europeans and 78 among natives, with 3 deaths. An increase was noted in cases of dysentery, 1647 cases being admitted, of whom 89 died; 125 of the cases admitted were Europeans, all of whom recovered; in the previous year there were only 1471 admissions with 48 deaths, the increase is attributed to the changed conditions produced by the war. The admissions for enteric fever rose from 46 (10 deaths) in 1914 to 182 (19 deaths) in 1915; 35 cases occurred amongst Europeans, of whom 3 died. 347 cases of pneumonia were recorded with 62 deaths; 13 of the cases, with 2 deaths, were Europeans.

Kenya and Nyanza Provinces.—4687 cases of malaria were treated, showing a continued increase. There were 3 European cases of blackwater fever, with 1 death. Only 1 case of trypanosomiasis came to light. Cerebro-spinal meningitis is fairly prevalent throughout the Nyanza Province; 27 cases were treated, with 23 deaths. Dysentery showed a notable increase and totalled, including 2 Europeans, 651 admissions, of whom 39 died. Only 2 cases of enteric fever were recorded. Cases of plague have been numerous in Nyanza Province, but figures showing the number of cases in the native Reserves are unobtainable; 33 native cases were admitted to Kisumu Hospital, and of these 29 died. There were 24 admissions of small-pox during 1915, of whom 2 died. An outbreak occurred in Nyanza Province, near the Uganda border, and spread to Kisumu; 514 cases were treated in the North Kavirondo district as out-patients up to March 31st, 1916, and 148 deaths were recorded.

Desert Zone.—1666 cases of malaria were admitted to treatment, and there was one European case of blackwater fever. There were 9 cases of beri beri, none being fatal. Admissions for dysentery numbered only 107, as compared with 373 in the previous year.

According to the Blue-book, just issued, of the Zanzibar Protectorate for the year 1916, the population of the island of Zanzibar is 114,069 and that of Pemba 83,130; the density of population is estimated at 175 per square mile in Zanzibar and 219 in Pemba. The birth-rate (births registered) for the year 1916 was 17·3, as against 19·7 per 1000 in 1915; the death-rate is not stated. Measures are being taken to ensure more accurate registration of births, and it is considered probable that when the registration of all births is secured it will be found that the births equal, or may even exceed, the deaths, contrary to opinions based on the figures now available.

The islands of Zanzibar and Pemba were free from any severe epidemic of disease during the year and the health of the community was fair. 28 deaths from tuberculosis and 16 deaths from malaria were so certified. These figures are not comparable with those for previous years and, although they do not accurately indicate the true prevalence of these diseases, only 25 per cent. of all deaths being certified by qualified medical men, they are the only figures available which are at all accurate. Three deaths were certified from blackwater fever. No case of plague was reported during the year, but there were 18 cases of small-pox, of which 3 were fatal. There were 8 cases, all fatal, of cerebro-spinal meningitis, and 6 deaths from tetanus occurred. The number of lepers in the two islands amounts probably to about 450. Of these 107 are segregated in one settlement in Zanzibar, administered by the Roman Catholic Mission under the supervision of the medical officer of health, and 185 in three settlements in Pemba, while the remainder are at large.

BACTERIOLOGICAL RESEARCH IN NEW ZEALAND.

To the Editor of THE LANCET.

SIR,—Could any of your readers give me any information as to the prospects for a bacteriologist in New Zealand next year or after the war? Could a living be made out of pathological and bacteriological work alone, or would it have to be part of general medical work? Any information as to source from which information can be obtained will be thankfully received by,

Yours truly,

Oct. 13th, 1917. INQUIRER.

OCT. 18TH: DIES SANCTI LUCÆ.

THAT St. Luke was a practising physician is now generally accepted. Baring-Gould, in his "Lives of the Saints," considers that he was a slave specially trained to act as family doctor to some patrician family in accordance with the custom of the time. Dr. Clapton, in his "Life of Saint Luke," considers that St. Luke went through a definite medical training and graduated at the University of Antioch. Miss Stawell, in an illuminating paper which she read at the last International Medical Congress in London, suggests that he was well acquainted with Virgil and influenced by Virgil's writings. Some have gone so far as to suggest that St. Luke and Virgil were the same person, but this is out of the question. Virgil died B.C. 19 and St. Luke was not born until five years later.

AN UNKNOWN SCULPTOR.

To the Editor of THE LANCET.

SIR,—In the new building of the University of Edinburgh, just outside the entrance to the Anatomical Museum, there stood in 1892 a Grecian statue of a discobolus (?) which, according to Sir William Turner, the then professor of anatomy, was about the most perfect statue showing the muscular development. Will any of your readers kindly let me know the full particulars as regards the sculptor, and where the original is to be seen now. I do not find it figured in any of the ordinary works on Grecian sculpture.—I am, Sir, yours faithfully,

Sept. 10th, 1917. D. A. T.

A NEW FRACTURE SUSPENSION APPARATUS.

Dr. J. M. Barlet, medical officer in charge of the French Hospital, Shaftesbury Avenue, has called our attention to the fact that the apparatus for slinging fractured limbs exhibited at the McCaul Hospital for Officers, and described in THE LANCET of Sept. 15th, has been in use for a long time at the American Red Cross Hospital of Paris, and was described and figured by Dr. J. Blake, médecin-chef and director of this hospital, in the *Archives de Médecine et de Pharmacie Militaires*. We have seen a reprint of Dr. Blake's article, published by L. Fournier, Paris, in 1916, in which are illustrated precisely the apparatus shown to our representative at the McCaul Hospital. Dr. Blake writes:—

> Without wishing to detract from the reputation of Miss Gasetti, who has done very good work over here, I must say that she has claimed originality for much apparatus which has not only been in use for a long time but which she first saw in the service for the surgeons under whom she was serving. Of course, the treatment of fractures by suspension and traction is not at all new, and consequently no one can claim it as their special method, and I do not think for this reason that this particular treatment should be given my name any more than Miss Gasetti. All I have done is simply to standardise the method by which it can be carried out systematically and with the materials which can most easily be obtainable.

CUPRASE.

To the Editor of THE LANCET.

SIR,—I shall be much obliged if any of your readers can nform me as to the result of use of cuprase in treatment f cancer in England.—I am, Sir, yours faithfully,

Oct. 12th, 1917. INQUIRER (2).

DOUBLE-YELKED EGGS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Oct. 6th a correspondent writes f an egg with two yelks. I have had this season from my oultry-yard 20 double-yelked eggs of large size, necessi ating the use of a wineglass (circumference 7 in.) as egg-cup.

I am, Sir, yours faithfully,

Oct. 15th, 1917. ANOTHER READER.

METEOROLOGICAL READINGS.

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office, Oct. 17th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
t. 11	...	79	53	40	39	42	Fine
" 12	0·19	66	53	42	44	47	Cloudy
" 13	0·40	63	49	43	44	46	Cloudy
" 14	0·11	77	53	39	38	39	Fine
" 15	...	82	52	39	39	40	Fine
" 16	0·03	63	55	40	49	51	Raining
" 17	0·35	70	58	51	54	55	Raining

Other information which we have been accustomed to give in these Readings" is withheld for the period of the war.

e following journals, magazines, &c., have been received:—Middlesex Hospital Journal, Dublin Journal of Medical Science, Cleveland Medical Journal, Annales de l'Institut Pasteur, Archives Médicales Belges, Children's Diseases, Medical Journal of South Africa, Symons's Meteorological Magazine, Shield, Homœopathic Recorder.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 22nd.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, J. Howard Mummery): at 8 P.M.
Inaugural Address:
By the President, Mr. J. H. Badcock.
Paper:
Mr. George Northcroft: A Short Account of a Year's Work at a Jaw Injury Centre in the London Command.

Thursday, Oct. 25th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—C. W. Buckley, J. Campbell McClure): at 6 P.M.
Inaugural Address:
The President, Dr. Preston King (Bath): Spa Treatment.
NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, H. G. Fearnsides): at 8.30 P.M.
Inaugural Address:
By the President, Dr. R. Percy Smith: Aphasia in relation to Mental Disease.

Friday, Oct. 26th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Cases:
Dr. Robert Hutchison: Note on Three Cases of Melæna Neonatorum treated by the Injection of Human Blood or Blood Serum.
Dr. Eric Pritchard: Case for Diagnosis.
And other cases.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY.—8.30 P.M., Discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation (introduced by Mr. M. Little and Major R. E. Elmslie, R.A.M.C.). There will be a Practical Demonstration with patients and appliances.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY.—4 P.M., Dr. C. Kempster: X Rays. The Tube and its Control. Measurement of Dose.
THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Anomalies of Pigmentation and What they Indicate.

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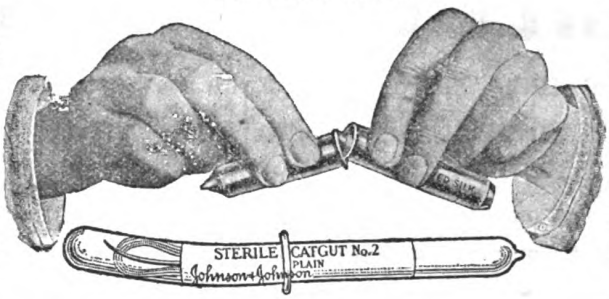
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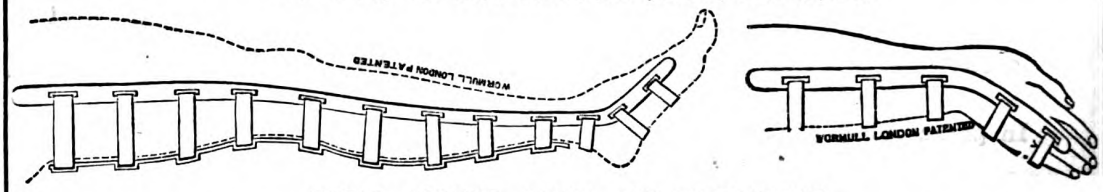
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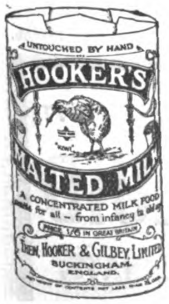
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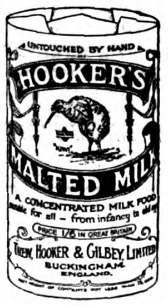
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Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.

MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.

Other days by appointment.

Visiting and Consulting Physicians { Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

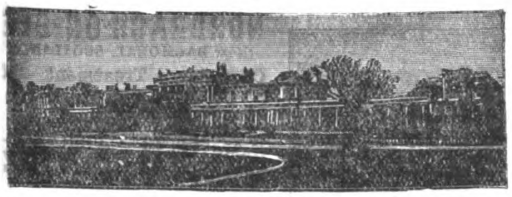
Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED, Certificated or otherwise. Dr. STANLEY GILL or Dr. HAYES GILL may be consulted at 31, RODNEY ST., LIVERPOOL, from 2 till 4 P.M. every Monday and Thursday. *For terms, &c., apply to* STANLEY A. GILL, M.D., M.R.C.P.Lond. Telephone—No. 8 FORMBY.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

HOMES FOR INEBRIATE WOMEN.

ELLISON LODGE, Herne Hill, S.E.

HAMOND LODGE, Terrington St. Clement, King's Lynn, [Norfolk.

TEMPLE LODGE, Torquay.

Terms: Drawing-Room, £2 2s., £1 1s.; Work-Room, 15s., 12s. 6d., 10s.; Kitchen, 7s. 6d. weekly.

REV. GERALD A. THOMPSON, Secretary Church of England Temperance Society, 50, Marsham-street, Westminster, S.W.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

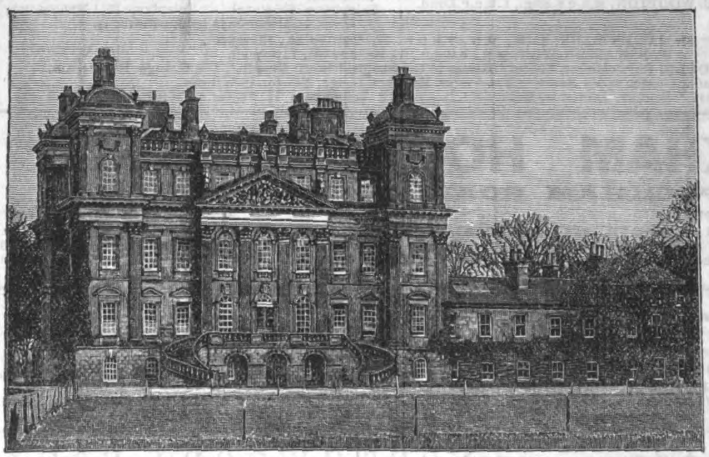
Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.



DUFF HOUSE, BANFF, SCOTLAND.

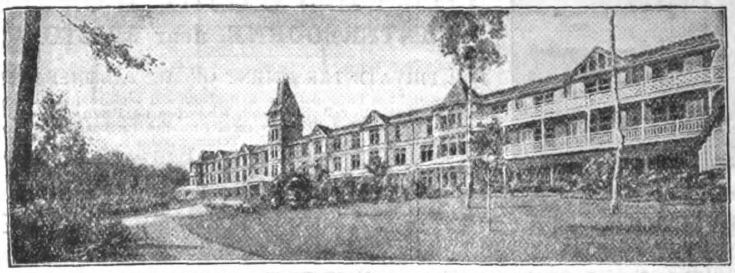
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

MATLOCK SANATORIUM

Situated over 700 feet above sea-level. The climate is dry and bracing, and the buildings and grounds are specially suitable for PULMONARY CASES.

A new X-ray apparatus has been installed, and all the most modern forms of treatment are available in suitable cases.

For particulars apply to F. KINCAID ETLINGER, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire.

Telegrams: SANATORIUM, MATLOCK. Telephone: MATLOCK 22.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

DARTMOOR SANATORIUM. 750 FEET.

TUBERCULIN USED ONLY FOR SUITABLE CASES.
WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; —— ——
For particulars, apply C. H. BERRY, M.R.C.S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 45, Spa Enquiry Offices, Droitwich (Worcs.). SPECIAL FACILITIES TO MEDICAL MEN.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes. Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received.
Terms from 4½ gns. weekly.
Apply, Medical Officer, or Mrs. Peele

BETHEL HOSPITAL FOR MENTAL DISEASES,

Established 1713.] **Norwich.** ['Phone: 330 Norwich.

An endowed Hospital for the reception of PRIVATE PATIENTS of both sexes. Voluntary Boarders admitted without certificates. Terms from 35s per week. Full particulars on application to the MEDICAL SUPERINTENDENT.

ASHWOOD HOUSE

KINGSWINFORD,

STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

NORTHUMBERLAND HOUSE,

GREEN LANES,

FINSBURY PARK, N.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Mental and Nervous Affections. Highly situated, facing Finsbury Park.
Voluntary Boarders received without certificates.
For particulars apply to the Resident Physician.
Telephone No. 888 North. Telegrams: "SUBSIDIARY, LONDON."

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD, near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes. This Institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.F., the Med. Supt. [Tel. No. 307

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.
Associated Rooms, Private Rooms, or Suites. Very moderate terms.
Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.
Telephone: 494 Brixton.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at COLTHURST HOUSE SCHOOL.

Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

PORTSMOUTH CORPORATION MENTAL HOSPITAL

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

TO MEMBERS OF THE MEDICAL PROFESSION.

IONIC MEDICATION, RADIANT HEAT,

MASSAGE, REMEDIAL EXERCISES, VIBRATION, HIGH FREQUENCY, SCHNEE FOUR CELL BATHS, NAUHEIM and AACHEN TREATMENTS.

EDGAR W. SHARMAN

(DIPLOMATE, FIRST PLACE WITH DISTINCTION, NATIONAL HOSP., LONDON),

39, Beaumont St., Devonshire St., W. 1.

Telephone No.: MAYFAIR 1324. Tel. Ad.: "SHARMANITE, LONDON."

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtsfold," Haslemere, Surrey. Telephone: 22 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

Rotherham Hospital.—Wanted, JUNIOR HOUSE SURGEON, Male, qualified. Salary £150, with board, lodging, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

Bermondsey Tuberculosis Dispensary. Wanted, MEDICAL OFFICER, with previous Tuberculosis experience. Whole-time post. Salary £500. Apply, with copies of testimonials, to the Hon. Sec., 108, Grange-road, S.E. 1.

Royal Cornwall Infirmary, Truro (90 beds, including accommodation for Wounded Soldiers).—HOUSE SURGEON wanted. Salary £150, rooms, board, and washing. Apply, with copies of three recent testimonials, to Secretary, of whom further particulars may be obtained.

British Red Cross Hospital, Netley.—Wanted, Medical Officer to take charge of wards with duties of ANÆSTHETIST. Applicants must be over Military age, or physically unfit for Army Service (and possess certificates of rejection by War Office). All applications, with testimonials, to be forwarded to the Registrar, British Red Cross Hospital, Netley.

Royal Victoria Infirmary, Newcastle-upon-Tyne.—The services of an ANÆSTHETIST (Non-Resident), registered in Medicine, are required by the House Committee of the Royal Victoria Infirmary, Newcastle-upon-Tyne.

Full particulars as to hours of duty, remuneration, &c., can be obtained by application to the House Governor and Secretary, to whom applications should be sent on or before Monday, 29th October, 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

The Manchester Northern Hospital for WOMEN and CHILDREN, Park-place, Cheetham Hill-road.—The Committee of Management require the services of a duly qualified HOUSE SURGEON, to commence duties on December 1st. Salary, with apartments and board, £150 per annum.

Applications, with testimonials, and stating age and experience, to be sent to Mr. HUBERT TEAGUE, Secretary, 38, Barton Arcade, Manchester, not later than November 3rd.

Salisbury General Infirmary (200 beds).—Wanted, a HOUSE SURGEON, Male or Female. Salary £150 per annum, with apartments, board, lodging, and washing.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

All applications, with testimonials, to be sent to the undersigned, of whom the rules relative to the duties may be had on application.

The duties may commence from the date of the appointment.

Dated 17th Sept., 1917. S. B. SMITH, Secretary.

The Royal Infirmary, Sheffield (363 beds).—Wanted, a HOUSE PHYSICIAN. Salary £120 per annum with board and residence. The duties of the Officer to be elected will include work in the In- and Out-Patient Departments under the supervision of the Honorary Medical Staff.

The post is an important one.

Applications, which are invited from persons who must be fully qualified, should be sent immediately, stating age, qualifications, and any previous experience. By order.

Board Room. JNO. W. BARNES, Secretary.

Wolverhampton & Midland Counties EYE INFIRMARY.—HOUSE SURGEON, Male or Female, wanted at once, preferably with a knowledge of Refraction. There are 56 beds for In-patients (20 of which are reserved for Military Cases) and a large Out-patient Department.

Salary £200, with furnished apartments, board, and laundry.

Applications, with copies of recent testimonials, should reach me by the 30th October inst.

ARTHUR M. MANBY, Secretary (pro tem.).

The Eye Infirmary, Wolverhampton, 16th October, 1917.

Royal Salop Infirmary, Shrewsbury.—HOUSE PHYSICIAN wanted, to take up the duties at the beginning of November. Candidates must be registered under the Medical Acts.

Applications, with recent testimonials (not less than three), to be sent to the undersigned forthwith.

Salary at the rate of £200 per annum, with board and apartments.

The duties consist of being responsible to the Medical Staff for the Medical cases, to assist the Pathologist, and to act as Anæsthetist.

The House Physician is the Junior Resident Officer.

Applications from married men will be considered.

6th October, 1917. ALFRED SUGDEN, Secretary.

Derbyshire Sanatorium. (Beds 100.) ASSISTANT MEDICAL OFFICER.—Applications are invited for the position of ASSISTANT MEDICAL OFFICER (RESIDENT) (Male or Female), at the Derbyshire Sanatorium for Tuberculosis, Walton Lane, near Chesterfield. Salary £350 per annum. A detached residence is provided for the Medical Officer, together with fuel, laundry, service, &c.

Candidates must be ineligible for Military Service.

Application forms may be obtained from the undersigned, to whom they must be returned, together with copies of not more than three recent testimonials, on or before Wednesday, October 31st, 1917.

SIDNEY BARWISE, M.D., B.Sc.,
County Medical Officer of Health.

New County Offices, St. Mary's Gate, Derby, Oct. 12th, 1917.

Evelina Hospital for Children, Southwark, London, S.E.—The Committee of Management require a HOUSE PHYSICIAN and a HOUSE SURGEON from 1st November to 12th March, 1918.

Salary at rate of £160 per annum, with board, residence, and washing. Candidates (either sex) should send applications before 25th instant with three testimonials (copies only), to the Secretary at the Hospital.

Applicants (qualified and registered) must be interviewed by the Medical Committee. Selected candidates have to appear before the Committee of Management. Time and place of meeting will be notified by the undersigned, from whom rules and other particulars relating to the post *must* be obtained.

By order of the Committee of Management.

8th October, 1917. H. C. STANILAND SMITH, Secretary.

Royal Victoria Infirmary, Newcastle-upon-Tyne.

RESIDENT APPOINTMENTS.

The following Resident Appointments will become vacant on Thursday, 1st November, 1917:—

Four HOUSE PHYSICIANS.
Five HOUSE SURGEONS.
Two Accident Room HOUSE SURGEONS.
One HOUSE SURGEON to the Aural and Ophthalmic Department.
One HOUSE SURGEON to the Gynæcological Department.
One HOUSE SURGEON to the Skin and Venereal Department.
One HOUSE SURGEON to the Out-patient Dressing Department.

Candidates for the appointments may be either Male or Female, and in the former case, must be ineligible for Military Service.

Applications should be sent to me not later than Saturday, 20th October, 1917.

6th October, 1917. D. WELLS PATTERSON, M.B., M.R.C.P., Dean.

Free Eye Hospital, Southampton.—

Wanted, HOUSE SURGEON (Male or Female). Must have ome knowledge of Eye work. Salary £100 a year, with board, dging, and laundry. State when disengaged. Apply to E. T. KEMP, ecretary (pro tem.).

Romsley Hill Sanatorium, near

Birmingham.—ASSISTANT MEDICAL SUPERINTENDENT. The Committee of the Birmingham Hospital Saturday Fund invite pplications for the above post. The Sanatorium is worked as part of ie City of Birmingham Tuberculosis Scheme, 140 beds, men and omen. Salary £350 per annum, with board, residence, and laundry. here is no accommodation for a married man. Applicants need not ive had similar experience previously. Applications, stating age, perience, and copies of references, to be sent to W. S. ASTON, onorary Secretary, 45, Newhall street, Birmingham.

Edinburgh Parish Council.—Assistant

MEDICAL OFFICER (qualified Resident) wanted for CRAIGOCKHART POORHOUSE and HOSPITAL, Edinburgh, to enter on ty 31st December next. Salary £250 per annum, with board and artments. The appointment is open to Male and Female candidates. Applications, stating age, &c., with copies of testimonials, to be ge1 with the Subscriber on or before Monday, 29th October curt.

R. T. FRENCH, Inspector and Clerk to Council.
Parish Council Chambers, Castle-terrace, Edinburgh.
6th October, 1917.

Sheffield City Hospitals. Infectious

DISEASES (440 beds).—MEDICAL OFFICER.—The City Hos als Committee invite applications from duly qualified registered dical Practitioners with bacteriological experience (must be ineligible Military Service) for the post of Assistant Resident Medical Officer the Lodge Moor Hospital.

Applications, stating age, experience, qualifications, and other ential particulars, and accompanied with copies of recent testiials, to be sent to the undersigned, endorsed "Medical Officer," on before October 31st, 1917.

E. H. WILLIAMS, Medical Superintendent.

Queen's Hospital for Children,

Hackney-road, Bethnal Green, E.2. — Resident Medical Posts will fall vacant as follows:—

HOUSE PHYSICIAN, 17th January.
CASUALTY HOUSE SURGEON, 1st January.
HOUSE SURGEON, 1st January.

x months' appointments. Salary £100 per annum, with board, idence, and washing.

andidates should be doubly qualified, but applications from Fifth Students will be entertained. T. GLENTON-KERR Secretary.
t Oct., 1917. Telephone: Dalston 306.

[AMENDED ADVERTISEMENT.]

County of the Parts of Lindsey

(Lindsey).—ASSISTANT MEDICAL OFFICER.—Applicas are invited for the position of Assistant Medical Officer (Male Female) to assist the County Medical Officer in School Medical spection, Maternity and Child Welfare work, &c.

alary £400 per annum, with reasonable out-of-pocket and travelling enses.

pplications, on forms to be obtained from the undersigned, must be ived immediately.

R. ASHLEIGH GLEGG, County Medical Officer of Health.
unty Health Department, 28s, High-street, Lincoln.

Royal Berkshire Hospital. — The

Board of Management invites applications for the appointment n HONORARY ASSISTANT SURGEON. Candidates must be ows or Members of one of the Royal Colleges of Surgeons of Great in or Ireland or a Surgical Graduate of one of the Universities of t Britain or Ireland, and must be registered.

e elected candidate will be appointed for the period ending on the Tuesday in January, 1918, but will be eligible for re-election ually. Canvassing by or on behalf of a candidate will disqualify him. plications, with copies of testimonials, must reach the Secretary ater than October 27th. Members of the existing Medical Staff, wever, need not furnish testimonials. The election will be held on mber 13th. HERMAN BURNEY, Secretary.
ading, Oct. 20th 1917.

City of Manchester.—The Sanitary

Committee of the Corporation of Manchester require the services fully qualified Whole-time LADY MEDICAL OFFICER with rience in the treatment of Children's Diseases, to hold (under the tion of the Medical Officer of Health) Consultations and Infant es at the Maternity and Child Welfare Centres of the Manchester oration, and (under the like direction) to perform such other duties pertain to the office.

e salary will be £350 per annum.

tatement of the duties and conditions of the office may be had on cation, in writing, to the Medical Officer of Health, Civic Buildings, unt Street, Manchester.

plications, stating age and experience, and endorsed on the ope "Medical Officer, Child Welfare," must be addressed to the Clerk only, and not to members of the Committee or Council, not than Saturday, November 3rd, 1917, and be accompanied by not than three recent testimonials.

successful candidate will be required to contribute to the oration Officers' Thrift Fund, and to execute their Deed of Service. vassing in any form, oral or written, direct or indirect, is bited. THOMAS HUDSON, Town Clerk.
wn Hall, Manchester, October 16th, 1917.

West Bromwich and District Hospital

(105 beds).—ASSISTANT HOUSE SURGEON required immediately. Candidates (ineligible for Military Service) must be unmarried, doubly qualified and registered under the Medical Acts. Applications from Senior Students will also be considered.

Applications, stating age, qualifications, and salary asked, to be sent to FRANK I. HANCOCK, Secretary.

Lady House Surgeon required for the

NOTTINGHAM and MIDLAND EYE INFIRMARY. Previous experience of Ophthalmic work not essential; exceptional opportunity of acquiring same. Salary £200 to £250, according to experience and qualifications, with board, residence, &c. Full particulars to Secretary, Mr. GEO. M. MOORE, 7, Parliament-street, Nottingham.

Hulme Dispensary, Dale-street,

Stretford-road, Manchester.—Wanted, a HOUSE SURGEON, of British descent, Male (ineligible for Military Service) or Female, duly registered and fully qualified. Salary £250 per annum, with apartments, attendance, coal, and gas. Time allowed for study.

Applications, with testimonials, at once to Honorary Medical Secretary.

Bridgwater Hospital. — Wanted, a

HOUSE SURGEON (Male or Female), if male ineligible for Army, fully qualified and registered. Salary £140 per annum, with board, lodging, and washing.

Duties to commence about November 10th.

Applications, with copies of not more than three testimonials, should be sent to the Honorary Secretary immediately.

Bank Chambers, Bridgwater. EDWARD TREVOR, Hon. Sec.

District Infirmary and Children's

HOSPITAL, Ashton-under-Lyne (General Hospital of 175 beds, 30 of which are used for Wounded Soldiers and Sailors).—HOUSE SURGEON. The post of House Surgeon will become vacant at the end of the year. Applications from duly qualified Ladies or Gentlemen will now be received. Salary £250 per annum, plus fees, and board, residence, and washing.

FRANK OLIVER,
General Superintendent & Secretary.

Bolton Infirmary and Dispensary

(166 beds, mostly Surgical, including Wounded Soldiers).—Applications for the appointment of a SENIOR HOUSE SURGEON are invited from Ladies having a registered Medical and Surgical qualification. Salary £300 per annum, with apartments, board, and attendance.

Applications, stating age, with copy of testimonials, should be forwarded to the undersigned, from whom further particulars may be obtained. A. E. BRISCOE, Secretary.

Rochdale Infirmary and Dispensary

(110 beds).—Wanted, a SENIOR HOUSE SURGEON (either sex). Salary £400 per annum. Also SECOND HOUSE SURGEON (either sex). Salary £200 per annum. With board, residence, and laundry. No outside visiting.

Applications, with testimonials, stating age, &c., to be sent to the undersigned, endorsed "House Surgeon."

Copy of Rules will be forwarded on application.

T. ELVYN KERSHAW, Secretary.

Manchester Education Committee.—

Wanted, an ASSISTANT SCHOOL MEDICAL OFFICER, for the period of the war. Salary £300 per annum, rising by annual increments of £25 to £450 per annum, together with £10 per annum for travelling expenses. Particulars of duties may be obtained by sending stamped addressed foolscap envelope to the undersigned. All applications must be received not later than 29th October, 1917.

SPURLEY HEY, Director of Education.
Education Offices, Deansgate, Manchester, 10th October, 1917.

Walsall and District Hospital.—The

Committee invite applications from ladies for the post of ASSISTANT HOUSE SURGEON and ANÆSTHETIST, which will shortly become vacant. Salary £175 per annum, with board, residence, and laundry.

Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, to the undersigned.

WALTER FRANCOMBE, Secretary.

Hampstead General & North-West

LONDON HOSPITAL.—CASUALTY OFFICER.—Applications are invited from duly registered Practitioners for the post of Casualty Officer. The salary will be at the rate of £150 per annum, together with board, residence, &c. The appointment will be for a period of six months.

Applications, together with copies of testimonials, should be addressed to the Secretary at the Hospital, not later than Nov. 1st.

Haverstock Hill, N.W. 3. Oct. 17th, 1917.

Matron Assistant wanted for Gartloch

MENTAL HOSPITAL, Gartcosh, near Glasgow. Preference will be given to applicants having mental training as well as general training. Salary commences at £45 per annum plus war bonus £11 5s., with board, lodging, laundry, and uniform.

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Lady Dispenser (Hall) would like position with Doctor in West of England. Previous experience and references.—Address, No. 512, THE LANCET Office, 423, Strand, W.C. 2.

Bacteriology.—Lady (Pharmacist) with good experience seeks post.—Address, No. 518, THE LANCET Office, 423, Strand, W.C. 2.

Secretary (woman) desires post in or near London with medical man or institution. Excellent experience and references. (Returns London next week.)—Apply, D. L., 20, King's-road, Paignton, Devon.

Lady Chauffeuse desires Engagement in London. R.A.C. Certificate. Careful driver.—Reply, stating particulars, to Motor, care of Deacon's, 7, Leadenhall-street, E.C. 3.

Partner wanted in a good-class very old-established General Country Practice in West County. Income over £1800 a year. Poor Law, Panel, and other appointments. Mainly agricultural and rising district. Plenty of scope for increase. Good educational facilities. An excellent opportunity for a young and energetic man (ineligible).—Further particulars, apply No. 6193, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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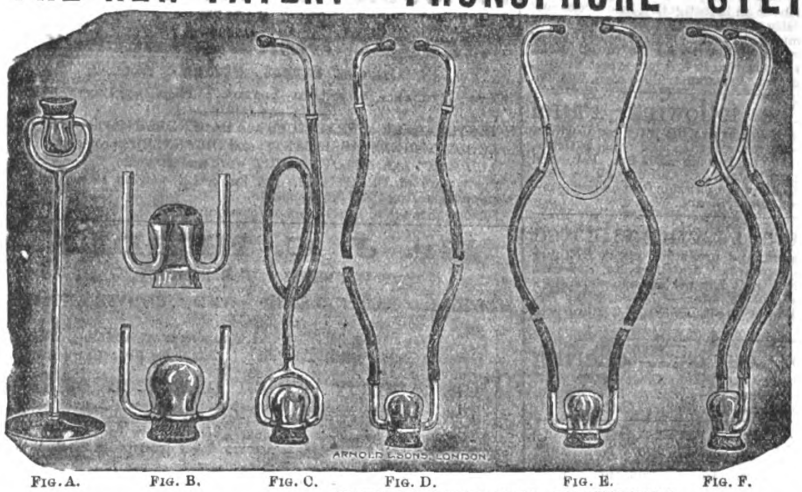


FIG. A. FIG. B. FIG. C. FIG. D. FIG. E. FIG. F.

The New Patent "Phonophore" Stethoscope (Fig. A.) 8/6
Ditto Chest piece (Fig. B.) 7/6
Ditto Single flexible (Fig. C.) 9/9
Ditto Double flexible (Fig. D.) 13/6
Ditto Binaural (Fig. E.) 16/6
Ditto Folding (Fig. F.) 17/6

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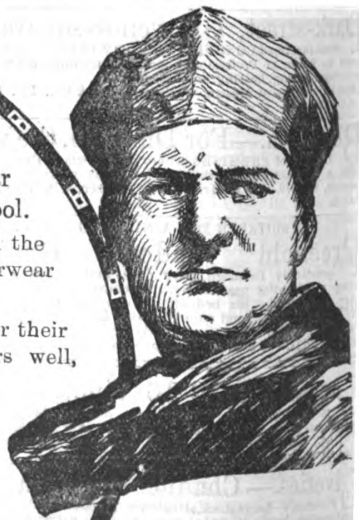
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THE LANCET.

No. 4913. LONDON, SATURDAY, OCTOBER 27, 1917. Vol. CXCIII.

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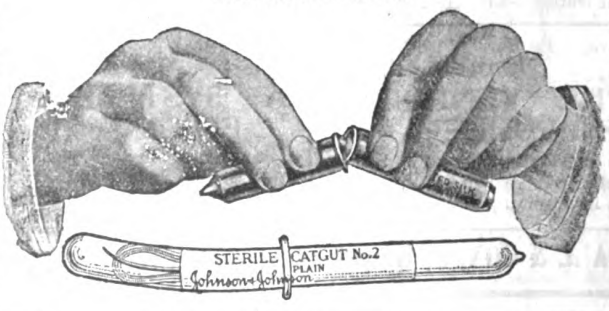
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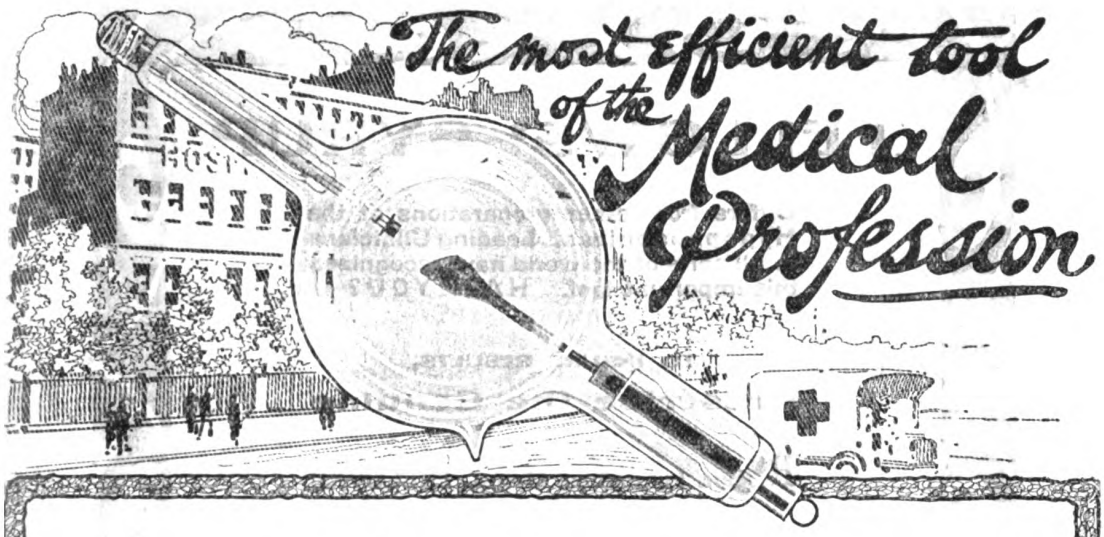
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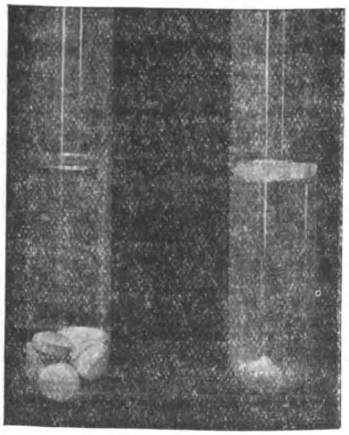
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The undermentioned preparations have been well tried by the Medical Profession, and have been found of great service in assisting expectoration, allaying cough, and correcting congestive and inflammatory conditions of the respiratory tract.

COCILLANA COMPOUND SYRUP
(P., D. & Co.)

A well-balanced association of tonic expectorant, respiratory stimulant, disinfectant, sedative, and laxative drugs. Each fluid ounce represents:—

Tinct. Cocillana	40 mins.
Tinct. Euphorbia Pilulifera	120 mins.
Syrup of Wild Lettuce	120 mins.
Compound Syrup of Squill (U.S.P.)	24 mins.
Cascarin (P., D. & Co.)	8 grs.
Diamorphine Hydrochloride	8/24 gr.
Menthol	8/100 gr.

This syrup has been found of very great value in cases of acute bronchitis, also in chronic cases when secretion is scanty and cough excessive. It does not arrest the secretions or cause constipation.

Dose.—½ to 1 fluid drachm, three or four times daily.

HEROIN AND TERPIN HYDRATE ELIXIR (P., D. & Co.)

A pleasantly flavoured bronchial sedative and stimulating expectorant. Each fluid ounce represents:—

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This elixir is widely prescribed in acute and chronic bronchitis, pneumonia, pertussis, laryngitis, and the cough of phthisis. It is very efficacious in the irritable cough which is so frequent an accompaniment of influenza.

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An agreeably-flavoured combination of sedatives, astringents, and stimulating expectorants. Each fluid ounce represents:—

White Pine Bark	30 grs.
Wild Cherry	30 grs.
Balsam Poplar (Balm of Gilead) Buds	4 grs.
Spikenard Root	4 grs.
Sanguinaria	3½ grs.
Sassafras	2 grs.
Chloroform	4 mins.
Morphine Acetate	3/16 gr.

This preparation provides a very effective remedy for catarrhal conditions of the bronchial mucous membrane, and is particularly valuable for the alleviation of a dry spasmodic cough with little, if any, expectoration. It does not impair the appetite or derange the digestive processes.

Dose.—1 to 2 fluid drachms, every three hours.

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This preparation differs from the preceding only in containing 1/3 grain of diamorphine (chemically identical with heroin) in place of 3/16 grain of morphine acetate; it is therefore preferable for use in cases where the administration of morphine is undesirable.

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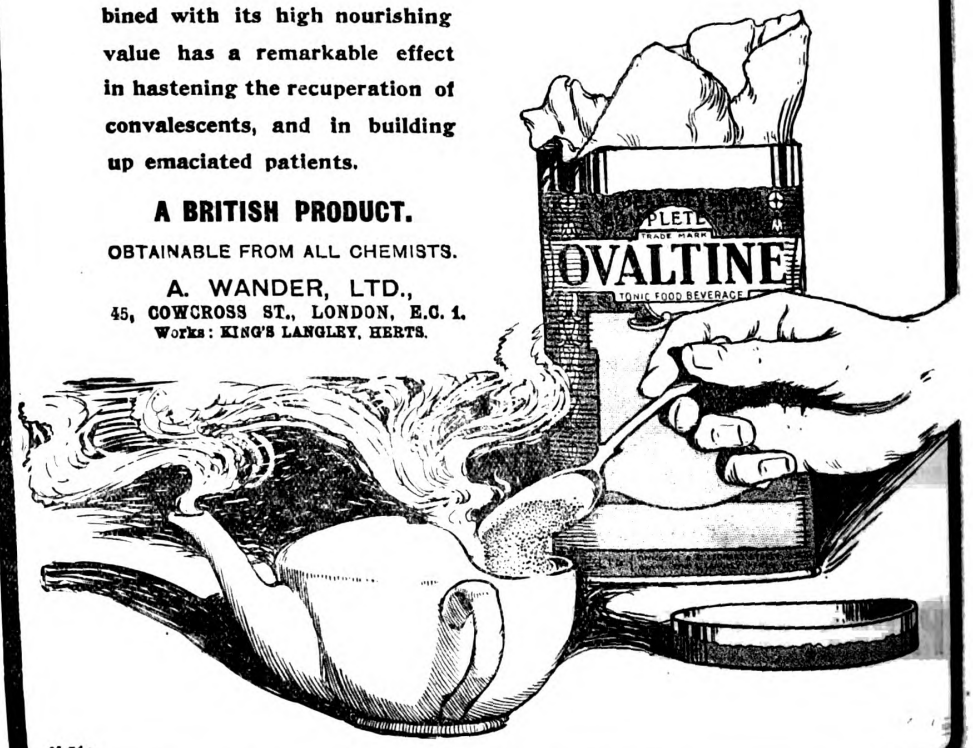
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A cup of "Ovaltine" contains as much nourishment as three eggs, and is digested and absorbed with the minimum of strain to the digestive functions. Its flavour is always acceptable even to the most fastidious and during prolonged courses. "Ovaltine" is distinguished from ordinary invalid foods in being unusually rich in organic phosphorus compounds. This combined with its high nourishing value has a remarkable effect in hastening the recuperation of convalescents, and in building up emaciated patients.

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DOSE—Children, one or two teaspoonfuls; Adults, one tablespoonful.

KASAK is a palatable ELIXIR offering the full therapeutic advantages of CASCARA, but free from the objectionable bitterness so characteristic of the BARK.

It is a prompt and efficient aperient, producing a laxative but not a purgative effect.

It exhibits a marked TONIC effect, and its use is not followed by the constipating reaction so common to aperients of this nature.

It may be prescribed also as **KASAK CAPSULES** and **KASAK PILULES.**

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KASAK with SENNA.

DOSE—Children, one teaspoonful; Adults, one dessertspoonful.

KASENA is a reliable and valuable aperient, specially introduced for delicate patients, women and children. It is highly recommended for tropical climates. Although containing CASCARA and SENNA it is free from the disagreeable bitterness of the former and the griping effect of the latter drug.

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NEW SYRUP OF SENNA.

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DOSE—Half to two teaspoonfuls.

A palatable and reliable aperient for children, somewhat stronger than the above. Owing to its special method of manufacture, it is free from the griping properties of SENNA, whilst it still retains the full medicinal effects of the drug.

It is pleasant to take and efficient in action.

Illustrated descriptive leaflet gratis on application.

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FORMULA :

Quinine Phosphate	**1½ grains.**
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"Bynin," Liquid Malt	**1 ounce.**

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is vastly superior to Easton's Syrup; the dose can be regulated with exactness; the digestive organs are reinforced and the system is invigorated by its powerful tonic action. It not only assists the digestion of food, but conserves and ensures complete assimilation.

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The Improved Casein-Glycerophosphate Food

Recommended in all Enfeebled Conditions, Mental and Nervous Exhaustion, Insomnia, Convalescence after Illness, etc.

"Bynogen" is a highly concentrated food of acknowledged value. It is specially rich in phosphorus, which is present in the condition in which it is found in brain substance and other nervous tissues.

Formula :

Pure, Soluble Milk Protein - 75 per cent. Sodium Glycerophosphate 2 per cent.
Dextrin-Maltose (specially prepared) 20 ,, Calcium Glycerophosphate 2 ,,
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Advantages :

Physical.

Possesses a most attractive flavour and aroma, mixes readily with milk, water, and other fluids. May be eaten dry, if desired, or sprinkled on articles of solid food. Keeps good indefinitely.

Therapeutic.

The percentage of Nitrogen is high. The Carbohydrate is in the most easily assimilable form. The mixed Glycerophosphates present the inorganic bases common in food-stuffs and do not cause constipation.

Medical Men are invited to write for samples of this unique Nutrient and Nerve Restorative.

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Beef, Milk, and Wheat (Pre-digested),

A Palatable, Highly Nutritious, Non-stimulating, and almost completely soluble food.

Contains approximately 40 per cent. of protein in the form of peptones and albumoses and 47 per cent. of carbohydrates in the form of lactose, dextrose, and maltose.

"Should serve as a rapid nutrient, especially in cases of digestion enfeebled by illness."—THE LANCET.

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Pepsencia contains *pure pepsin*, the vitality of which is unimpaired by chemical action or manipulation, as it is obtained by direct solution from the secreting glands of the gastric mucous membrane, every care being exercised to preserve its full physiological activity.

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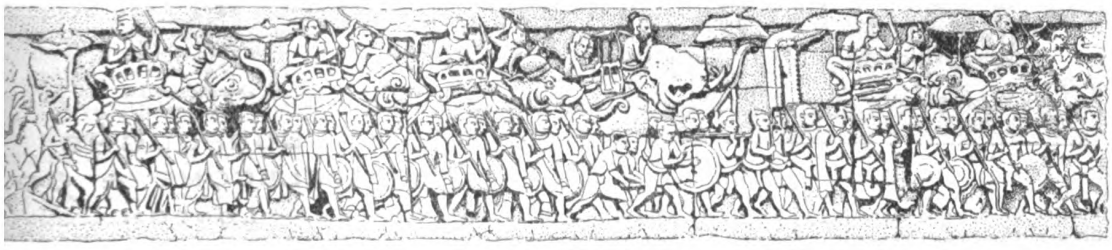
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The Harveian Oration:

HARVEY'S WORK CONSIDERED IN RELATION TO SCIENTIFIC KNOWLEDGE AND UNIVERSITY EDUCATION IN HIS TIME.

Delivered before the Royal College of Physicians of London on Oct. 18th, 1917,

BY ROBERT SAUNDBY, M.D., F.R.C.P., M.Sc., LL.D.,

EX-PROFESSOR OF MEDICINE, UNIVERSITY OF BIRMINGHAM; CONSULTING PHYSICIAN, BIRMINGHAM GENERAL HOSPITAL.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GENTLEMEN,—In the first place I have to thank you, Sir, for entrusting me with the most honourable duty of delivering the annual oration founded by our greatest associate, Dr. William Harvey, the supreme glory of our College, whose memory we all cherish and whose work is universally regarded as the peculiar pride of English medicine. In founding this oration he enjoined in the deed of gift that the orator should exhort the Fellows of the College to search out and study the secrets of nature by way of experiment, and for the honour of the profession to continue in mutual love and affection among themselves. It was also his wish that on this occasion should be commemorated those benefactors of the College who by gifts or by their contributions to medical knowledge have forwarded the interests of this College in the course of the bygone year.

RECOGNITION OF HARVEY'S WORK.

Harvey's work has been justly regarded as remarkable by its great success in his own lifetime, and especially in his own country and among his colleagues in this College, where there appear to have been no discordant voices. So far from it being true, as a recent British writer has ventured to say, that the only criticisms on his work were heard from his fellow-countrymen, the very contrary is the truth, and, as Willis expressly says, the appearance of Harvey's book seems almost immediately to have attracted the attention of all the better intellects among the medical men of Europe. The controversy on the circulation was carried on abroad rather than at home, for Harvey seems to have won over to his side all the men of his own country who by their education and acquirements might have been fitted to array themselves against him, and the first publication to deal with the question by one of Harvey's countrymen was that of Dr. George Ent, who undertook to defend Harvey's teaching against the criticisms of Parisanus.

A century had to elapse before the voice of criticism was heard from any British authority, and then it was the extremely able but somewhat quarrelsome anatomist Dr. William Hunter, who sought to depreciate the work of Harvey by comparing it with the discovery of America by Columbus, and the astronomical induction of Copernicus, disparaging Harvey's mental abilities on the ground of his failure to recognise the value of the discovery of the lacteals by Asellius, whose book was published about the same time as that of Harvey on the Circulation of the Blood (1627). William Hunter's quarrel with his glorious brother John over the placental circulation does not show him in a very amiable or even an altogether honest light; and much as we may regret that so able an anatomist should have adopted this hypercritical attitude, I think we may fairly say that his comments in no way succeeded in diminishing the glory of Harvey.

CONTRIBUTIONS TO HARVEIAN LITERATURE.

Successive Harveian orators have so diligently explored the somewhat scanty literary remains that throw any light upon the life and doings of our illustrious fellow countryman, that the College warmly appreciated the address by the late President, Sir Thomas Barlow, who occupied this chair in October, 1916, and by his munificence had placed in the possession of the College certain documents, consisting of eight of Harvey's own letters written at the time when he accompanied the Earl of Arundel on an embassy to the Emperor Ferdinand. Although these letters deal with only a short episode in the life of Harvey and throw no light whatever upon his physiological researches, they are exceedingly welcome as being contemporary accounts in his own handwriting, illustrating some at least of the difficulties that a traveller in those days met with even when forming part of the suite of a British Ambassador. It is not often that a Fellow of this College enjoys the opportunity of making a benefaction which is so closely related to the personality of Harvey, but it is possible that in the much greater attention now paid to the State papers which were so long neglected, more may be found bearing upon the life of Harvey in his position at the Court of Charles I., where he undoubtedly enjoyed the favour and the personal friendship of the King.

The College must acknowledge a valuable contribution to its Harveian literature in the publication of a memoir to recall the seventeenth century friendship of Finch and Baines, written by Dr. Malloch, a Captain in the Canadian Army Medical Corps. These two graduates of Cambridge in the seventeenth century went from Cambridge to France and thence to Padua, where the professor who lectured to them on anatomy was Antonio Molinetto. Finch was a brother of Lord Nottingham, whose niece was the wife of Harvey, for whom he entertained the greatest veneration. From Padua they went to Pisa where Finch was appointed professor of anatomy, his course of lectures including both morbid and comparative anatomy. While there he examined a live torpedo (*T. narce*) sent him by the Grand Duke of Tuscany. He describes a "pricking sensation like that which comes when you suddenly put cold fingers to the fire," on touching the fish. Later when it died he dissected it and his report is extant; it is to be issued shortly by the Historical MSS. Commission edited by Mrs. Lomas. The friends returned to England soon after the Restoration, Baines being appointed professor of music at Gresham College, and both were unanimously elected Fellows of this College, partly no doubt on the ground of their relationship by marriage and friendship with the illustrious Harvey. Soon after they received their degrees as Doctors of Physic at Cambridge, and in the same month the King knighted Finch, the like honour being conferred on Baines 11 years later. Finch returned to Italy and again taught anatomy at Pisa. In 1665 he was appointed the King's resident at the Court of Tuscany and stayed there with Baines until the death of the Grand Duke in 1670. Finch was next sent to the Porte as English Ambassador and remained in Turkey till 1681 when Sir Thomas Baines died, and Finch brought the body home; he died shortly after, according to his epitaph—"Of sorrow at the loss of Sir Thomas Baines." They were both buried in the chapel at Christ's College, Cambridge, where in memory of their friendship Finch founded two fellowships and two scholarships.

BENEFACTORS OF THE COLLEGE.

Among the great benefactors of this College whose names cannot be passed over in silence are the two Hamey's, father and son; Theodore Goulston, founder of the Goulston lectures; Sir Theodore Mayerne; Dr. Richard Caldwell, who with John Lord Lumley founded the Lumleian lectureship; Lady Sadlier, founder of the Croonian lectureship in memory of her first husband, Dr. William Croone; Dr. William Wood Bradshaw, founder of the Bradshaw lecture; Mrs. FitzPatrick, who founded the FitzPatrick lecture on the History of Medicine in memory of her husband, Dr. Thomas FitzPatrick; and Dr. Gavin Milroy, one of the pioneers in the subject of public health, who left £2000 to endow a lectureship on State Medicine and Public Health and Subjects Connected Therewith. Further, as announced by Sir Thomas Barlow last year, there is the foundation of the Streatfeild Research Fund, endowed with £10,000 in 2½ per cent. annuities given by Mrs. Eliza Streatfeild for the purpose of the endowment of research, the fund being vested in the joint names of the two Royal Colleges, who act as its administrators.

On Dec. 16th, 1916, the College received through our Fellow, Dr. Malins, of Birmingham, a gift of £500 from Mr. F. W. Mitchell, to be devoted to the object of the research, investigation, and treatment of tuberculosis.

On Oct. 26th, 1916, under the will of Mrs. Fanny Hertz, of 40, Lansdowne-crescent, W., the College became possessed of a fine portrait of the late Dr. J. E. Bridges, which has been hung in the hall

In addition valuable donations of books have been made to the library.

A CRITICISM OF HARVEY'S VIEW.

An instructive criticism of Harvey's opinions was published two years ago by the late Professor Curtis, of Columbia University.[1] In Harvey's life-time he was often asked by his opponents to explain the purpose of the circulation, and he was never able to give a satisfactory reply. Why should the blood traverse the lungs, return to the heart, be distributed to the whole of the body, and then be brought back again to the heart in order to be transmitted again through the lungs? What did the blood gain by its passage through the lungs? Harvey taught that it was ventilated or cooled there, deriving heat from the heart which was the centre of bodily heat. We may wonder why Harvey, following Aristotle, should regard air as cooling fire. Surely the effect of air on fire must have been known to him, and it certainly seems strange that Aristotle should have said that air keeps fire from consuming the fuel too fast; was he not familiar with a smith's furnace, and with the manufacture of charcoal by limiting the access of air? Harvey knew that air was necessary to a candle and to fire, but did not know why. He accepted the doctrine of "spirits," an expression used by Aristotle, Erisistratus, and Galen, as something derived from the air and introduced into the circulation with the blood (Erisistratus) or by itself (Aristotle).

Nearly a hundred years before Harvey's time Realdus Columbus (1559), taught that air was mixed with the blood in the lungs, where the transfer took place from the right to the left side of the heart. But this great fact that the blood in its passage through the lungs took up air was rejected by Harvey. He heads the passage: "Spirits not from Air," and he quotes an experiment to show that air does not pass into the blood, as he evidently expected to see the blood frothy if this were so.

Harvey maintained these views all his life and never understood the function of respiration, which is not surprising, as he was ignorant of the nature of combustion, of oxidation, of the corpuscular structure of the blood, and of the function of hæmoglobin. He was unable to explain the difference in colour of arterial and venous blood, but he sought to minimise the importance of this by pointing out that both when drawn and allowed to stand become nearly the same colour and not of any great difference of either consistency or bulk. He knew that during life the arterial blood in the lungs was redder and that the lungs were florid. He could never explain why the fœtus could live without air and yet after birth be readily suffocated by air being excluded. He always followed Aristotle in the doctrine that the heart was the primordial centre of life, and Curtis thought that Aristotle was familiar with the pulse from observing the incubating egg, where the heart makes its appearance early, and to which he consequently attributed all the chief functions of the body, including the affections, feelings, senses, and the like. Hence we still speak of the heart as the seat of emotion, of "a change of heart," "Unto Thee all hearts are opened," "Cleanse our hearts," &c. It never occurred to Harvey to inquire into the nature of the fumes given off during expiration. In Harvey's time the view was generally held that the blood is distributed to the tissues from the liver in spite of the existence of the pulmonary artery and the lungs in life being full of blood, but it is probable that medical men were blinded by the fact that after death the lungs are usually bloodless.

Harvey, moreover, was not constant in his allegiance to the heart as the centre and source of the motive power of the circulation, for as early as his lecture notes of 1616, and even in his latest utterances, he regards the blood as endowed with movement, and in his treatise on Generation he asserted the primacy of the blood—"the leaping point"—the pulsating vesicle which he regarded as the first beginnings of the embryo. The blood, he says, is prior to its receptacle, the contained to its container. He maintained that the order is first the blood, second the pulsation, and third the vesicle. The blood is the "first to live and the last to die." Here, as Curtis says, Harvey was misled by his confidence in what we call naked-eye appearances and his want of better appliances. It would have been logical of Harvey had he attributed the pulse and the heart beat to the "leaping blood," but in his letter to Riolanus he says it was due to the boiling or bubbling of fermentation. He thought the swelling of the blood caused by its innate heat stimulated the auricle to contract, and he located this effect just between the openings of the superior and inferior cavæ, where we now place the bundle of His. The contraction of the auricles is, then, the cause of the contraction of the ventricles.

Curtis points out the difficulty Harvey was in owing to the backward state of physics. He was 14 years younger than Galileo, who was unable to explain the common pump, and Harvey's discovery was made public 13 years before Torricelli's momentous work on the movement of liquids. We must therefore recognise that many of the questions which by us are readily answered were in the days of Harvey quite insoluble, but we owe him our gratitude for the enormous advances he made with the means at his disposal.

CAMBRIDGE UNIVERSITY IN THE SIXTEENTH AND SEVENTEENTH CENTURIES.

It is of interest to inquire what were the opportunities afforded by Cambridge to the student who desired to study medicine, and how far it was possible for him to set out on the path of such learning as in those days would be regarded as at least preliminary to his studies.

The sixteenth century was not favourable to the English Universities. They suffered greatly from the religious convulsions of the period. Not only were the abolition and disendowment of the religious houses causes of financial embarrassment, but sectarian considerations rather than those of character and learning were paramount in the choice of the heads of houses and professors. Religious differences could not but influence the willingness of parents to send their sons to the universities and the resulting decline in numbers with the consequent loss of pupils' fees, impoverished the University exchequer, and such was the lowering of the standard of scholarship that the libraries were spoiled by the selling of so-called "useless" books.

The University in the Reign of Edward VI.

On the other hand, in the reign of Edward VI. (1547-1553) were founded the five Regius professorships in Divinity, Civil Law, Physic, Hebrew, and Greek, each being endowed with a stipend of £40, and so far as it goes we may take the professorship of physic as some evidence that the study of medicine was not altogether ignored. The first incumbent of the chair was Dr. John Blythe, of King's College, an M.D. of Ferrara, for at this time and perhaps for a century later Cambridge men had to go abroad for instruction in strictly professional subjects. John Caius left Cambridge in 1539 for Padua, where he lectured on Aristotle, in return studying "Medicine and Anatomy," which is some evidence that at Cambridge these subjects were less cultivated than Greek.

In the reign of Edward VI. the university attracted many students, of whom too many were absorbed in theological controversy (Ascham), moreover it was complained that the majority were mere boys, the sons of wealthy parents, who never became serious students but by their presence interfered with the attendance of a poorer class who would give up their whole time to study. The prevailing spirit of the university was indolence. In 1558 Caius had spoken of the disappearance of "the poor modest diligent student who rose early, lived on scanty fare and respectfully capped his seniors." Gone, too, were the dignified elders of former times, of sedate countenance and stately mien, punctilious in wearing academic dress and punctual in attendance at the disputations in the schools. The undergraduates had discarded long gowns and caps, their garments were gaudy, they gambled and drank, and discipline was so much relaxed that those whose misconduct led to their expulsion from one college had no difficulty in obtaining admission to another.

The offices of the University became sinecures; for example, there seemed to be no objection to Ascham, the public orator of the University, living abroad, while Ridley retained his Mastership of Pembroke when Bishop, at first of Rochester, and afterwards of London. The Doctor's degree was taken in scarcely any faculty, and as there were no examinations, and disputations had become neglected, such as were given could scarcely be regarded as evidence of learning or ability. If Cambridge had not sunk as low as certain German universities which Bucer condemns for

[1] John G. Curtis, M.D., LL.D.: Harvey's Views on the Use of the Circulation of the Blood. New York: Columbia University Press. 1915.

giving degrees for money, yet there was much indolence among the resident Fellows, who lived like drone bees on the fat of the colleges.

In the new code of Edward VI., introduced in 1549, the text-books of the professor of medicine were to be Hippocrates and Galen.

Foundation of Caius College.

In the reign of Mary (1553–1558) there was little in the state of the University to give satisfaction to any lover of learning, and the only fact which at this time can be regarded as conferring a real and permanent benefit upon the University was the foundation of the College that bears the name of Dr. Caius, who was private physician to the Queen, was nine times elected President of this College, and bore a professional reputation inferior to none of his contemporaries in this country.

Dr. Caius was a staunch Catholic, but he had travelled and seen much of men and things so that he possessed an open and tolerant mind. He had studied anatomy under Vesalius at Padua, had visited other Italian universities, and had formed the acquaintance of the chief scholars of France and Germany. Being unmarried and wealthy and somewhat of a recluse, he retired to Cambridge, where he became a Fellow of Gonville Hall. In 1557 he obtained a license from Philip and Mary to refound the College as co-founder with Edmund Gonville and Bishop Bateman, endowing it with the manor of Croxley and Snellshall and several other properties. When the College was reconstructed in 1572 it was to consist of a Master, 13 Fellows, and 21 scholars, the Master being a Bachelor or Doctor of one of the three faculties.

It is noteworthy as bearing upon the question of the state of medical education in Cambridge that the holders of Medical Fellowships and *those only* were permitted to repair for the prosecution of their studies to the continent, for, says the statute: "Theology and Civil Law may be studied just as well here as there," and it is fair to infer that medical science could not. These travelling Fellows were required to go to a "good school," preference being given to "Padua, Bologna, Monte Pulciano, and Paris."

Neglect of Learning.

On the accession of Elizabeth the fresh instructions to the Commission for the Reorganisation and Reformation of the Universities followed closely those (1549) in the reign of Edward VI., but with the notable omission of the clause for the foundation of a Chair of Medicine and one of Civil Law. It is not necessary to recount the troubles and differences which occurred at Caius College owing to the personal unpopularity of Caius, who was disliked by the majority of the Fellows and who retaliated by showing his contempt for their indifference to learning and their lax conduct, the manners of the students of this period leaving much to be desired.

We have seen that a generation before the study of Greek was pursued with much success at Cambridge, but it had become so neglected that eminent scions of the University, like Whitgift and Walter Haddon, were ignorant of it, and Giordano Bruno, who visited England and Oxford in 1582, complains that the Oxford undergraduate "drank too much beer," while his seniors were "pedantic and stupid;" but perhaps it is unfair to assume that these faults extended to the sister University. Companionable behaviour, the capacity to sit long at table after dinner and supper, were more helpful to a degree than reputation acquired in the schools or any display of ability there evoked.

The attendance upon the lectures of the University Professors fell off, no doubt in part in consequence of the development of the college system, undergraduates preferring to get such instruction as they desired in the class-rooms of their college tutors; but if to the college system may be not fairly attributed the decay of professorial teaching at Oxford and Cambridge, it may, on the other hand, be credited with having preserved these institutions from such sins on morals and manners as still mar the reputation of the chief German universities.

When Caius was in Italy he was a zealous disciple of Giovanni di Monte (1508–1552), who was the first modern to teach medicine at the bedside, which he did at the hospital of St. Francis. Unfortunately, Caius did nothing to transplant this method to his native country, and it was at least two centuries before clinical teaching was practised, even in a rudimentary fashion, in British hospitals.

Francis Glisson, Regius Professor of Physic at Cambridge.

The career of Francis Glisson, a former President of this College, illustrates to some extent the state of medical education at Cambridge, where he was Regius professor of physic from 1636 until his death in 1677. He entered Caius College in 1617, graduated B.A. in 1621 and M.A. in 1624, M.D. in 1634. He lectured at first on normal, morbid, and comparative anatomy, and in 1640 he gave the Goulstonian lectures of this College. Up to this date—that is, four years after being appointed Regius professor—he lived in Cambridge, but in 1640 he took a house in Colchester, where he "soon obtained much practice" and where he continued to live until after the siege of that city, when he became much impoverished and moved to London. Here he took a house in New-street, in the parish of St. Bride's, and resided there up to his death in 1677. He was President of this College in 1667–8–9. In 1675 the University obliged him to appoint Dr. Brady as his deputy at Cambridge, but the fact that he was non-resident for over 40 years of his incumbency of the professorship may not unfairly be taken to indicate the little interest felt in medical education at Cambridge.

As is well known Glisson was an energetic student of his profession and published many valuable monographs, especially that on Rickets and on the Anatomy of the Liver; by the latter his name has been preserved and is familiar to all medical students from "Glisson's capsule," applied to its external fibrous sheath. His portrait painted at the age of seventy-five is in the possession of this College.

WEBSTER'S "EXAMINATION OF ACADEMIES."

One looks to Webster's book, the "Examination of Academies,"[2] for a criticism of the work of the University at or about Harvey's time, but it is disappointing. Webster was evidently a fanatical puritan who found fault with the Universities because they professed to train men for the ministry, whereby they are said to fill them with vain knowledge. He expressed doubt whether the knowledge of Greek and Hebrew could in any way aid the right understanding of the Gospel, and thought that only the Spirit of Christ could convey this information. He praised such mystics as Jacob Boehme; he believed in the existence of a Heavenly dialect which was what John heard and God used in speaking to Adam; that animals probably communicated with one another by it.

He objected to the Aristotelian philosophy and preferred to it the teaching of the Rosicrucians, and that of our "learned countryman" Dr. Fludde. He condemned the medical profession for adhering to what he calls "ignorant, wicked and blind Pagans," for neglecting magic and cabalistic science and that "great book" the "Macrocosm" of Paracelsus. He quoted with approval the saying, "For the Lord hath created the physician not the schools," and he condemned the neglect of that "laudable, excellent, and profitable science" of physiognomy, the neglect of the science of Celestial signatures, and the study of natural dreams.

Coming to more reasonable criticism he found fault with the uniformity of method followed in teaching by the slothful performance of the Acts, there being only four in the year, to these being conducted in Latin, which tended to obscurity and to the neglect of our mother tongue. He says that the "Romans used Latin and prohibited Greek" (?), while the Greeks wrote in their native language. He thinks too much importance is assigned to the opinions of the ancients, and that Lord Bacon has indicated a better method than that of the scholastic philosophy, that physics and chemistry should be taught by laboratories as well as libraries.

While there is much in this with which a modern would agree, the criticism on the whole is peevish and unreasonable, and suggests nothing that has any direct bearing upon the improvement of medical education.

Webster seems to have had small right to pose as the critic of the Universities, for it is at least doubtful whether he was at any time a member of either of them. He speaks of himself as educated at Cambridge, but no trace of him can be found in the University registers according to the Dictionary of National Biography. He was ordained in 1632, curate of Kildwick in Craven in 1634, and Master of the Grammar School at Clitheroe in 1643. In the Civil War he seems to have taken the Parliamentary side, and was surgeon

[2] Academiarum Examen, London, 1564.

and chaplain to a regiment in the Parliamentary army, becoming a Noncomformist and being intruded as vicar of Mitton in Yorkshire and also at All Hallows in Lombard-street. He acquired some fame as a preacher, but later on he fell into discredit, for his books were seized in 1657 and he gave up the ministry. Later in life he studied metallurgy and practised medicine. He died at Clitheroe in 1682.

"THE VINDICATION OF ACADEMIES."

Webster's book was answered by John Wilkins and Seth Ward in the "Vindication of Academies."[3] In this defence of the Universities the authors complained that Webster, and even Hobbes, were ignorant of the present state of the Universities and of the grounds of those arts and sciences which they pretended to improve. Surprise is expressed that the Universities should be condemned as rigidly bound to Aristotle and accused of ignoring the modern advances in knowledge which have modified his teaching. On the contrary, all modern ideas were freely discussed—the anatomical and magnetical philosophy and the Copernican astronomy. That both in the public lectures and private classes of the Universities those things which they are accused of neglecting are taught and are well learnt. Particular exception was taken to the criticism which maintained that University teaching is not only useless but harmful to candidates for the ministry, for such academic knowledge "added to the gifts of grace must be only helpful and not injurious."

On the other hand, Webster's praise of the Rosicrucians, of Jacob Boehme and of judicial astrology show him to be a credulous fanatic. Further, Webster is accused of plagiarism, of stealing whole sheets of Gassendi's book, and of being wholly dependent upon those translations to which he had access for his knowledge of foreign writers. The accusation that the study of chemistry was neglected was denied, and with some reason it was pointed out that, the practice of medicine being an art which is based on observation and experience, new discoveries in anatomy do not always involve alterations in practice equal to that in theory, but have often confirmed and established practical rules.

Webster's objection to the use of the term "divines" as blasphemous is treated as ridiculous, but it is conceded that "theologian" is better, and the complaint of the use of the Scriptures in scholastic exercises is inconsistent with the desire expressed that Christian principles should be introduced into the schools of physical learning. Moderns may agree with the contention that students should be taught to use their hands in laboratory work, but there is force in the objection that the wishes of parents must be respected, and that in the sixteenth and seventeenth centuries it was not thought desirable to teach young gentlemen natural philosophy, chemistry, agriculture, or mechanics. but they should be trained to be rational and graceful speakers and fitted to move in polite society.

Webster's critic, John Wilkins, the Bishop of Chester, was one of the most learned and estimable men of that age. He adhered to the Parliamentary side in the Civil War, and was Warden of Wadham College in 1648. He had the reputation of being a wise, beneficent, and tolerant Head of the College, and he may be justly called the founder of the Royal Society. The weekly meetings of the London philosophers, when held in Oxford, took place in the Warden's lodgings. Although siding with the Commonwealth, he preserved the University from the ignorant commanders and soldiers who, unrestrained, would have demolished all places and persons that pretended to learning. He was afterwards appointed Master of Trinity College, Cambridge, where he was greatly honoured and loved, but at the Restoration he was deprived of this post, as it had been long promised to Henry Ferne. He was made Prebend of York and Dean of Ripon. He procured the incorporation of the Royal Society in 1662, becoming its first secretary. He lost his library and valuable MSS in the great Fire of London. He was made Bishop of Chester in 1668 and died in 1672. He is generally supposed to have written the preface to Seth Ward's "Vindiciae Academiarum."

"AN ARK FOR SUBMARINE NAVIGATION."

Bishop Wilkins was interested in many things, and Professor Joly, of Trinity College, Dublin, has recently drawn attention[4] to his little volume, entitled "Mathematical Magic," in which one chapter is headed "Concerning the Possibility of Framing an Ark for Submarine Navigation, the Difficulties and Conveniences of such a Contrivance."

This invention seems to have been produced by a Dutchman named Cornelius Drebbel, who was born in Alkmaar in Holland in 1572, and came to England in 1604, where he secured the favour of James I., and was given lodgings in Eltham Palace. He left England at the invitation of the Emperor of Germany, but was involved in the misfortunes of the Thirty Years War, when he was thrown into prison. Through the intermediation of James I. his release was procured, and he returned to England, where he remained until his death in 1634. He appears to have enjoyed the esteem of his contemporaries, especially of the Hon. Robert Boyle, who refers to him as a "deservedly famous mechanician and chymist."

The great interest to us of Drebbel's work is that he appears to have been much ahead of his contemporaries in appreciating the function of respiration. It is said that he built a ship in which a man could navigate under water from Westminster to Greenwich. In the boat "a person could see under the surface of the water and without candlelight as much as he needed to read in the Bible or any other book." This remarkable ship was in 1645 yet to be seen lying in the Thames or London river (C. van der Oonde). Boyle accepted the testimony of what he called "a few credible persons" that Drebbel could enable men to continue under water without suffocation or even inconvenience. for, as he says, it is "not the whole body of the air, but a certain quintessence or spirituous part of it that makes it fit for respiration, which being spent the remaining grosser body of the air is unable to cherish the vital frame." So that besides the mechanical contrivance of his vessel he had—

"a chemical liquor which he accounted the chief secret of his submarine invention, for when from time to time he perceived that the finer and purer part of the air was consumed or overclogged by the respirations and steams of those who went in his ship he would, by unstopping the vessel full of his liquor, speedily restore to the troubled air such a proportion of vital parts as would make it again for a good while fit for respiration, whether by dissipating or precipitating the grosser exhalations or by some other intelligible way."

According to Boyle, Drebbel kept the nature of the liquor a close secret and justified his own inquiry because the man and his invention were so extraordinary, all the more so, as it was 150 years before the discovery of oxygen by Priestley and Lavoisier and of the part played by it in respiration. It was not until 1681 that John Mayow published his conclusion that respiration and combustion are analogous phenomena. Drebbel must have discovered some means for removing from respired air its poisonous properties, as by drawing it through lime-water to absorb the carbon dioxide, by which it would be possible to prolong the voyage, and the ventilation of the boat may have been assisted by pipes going to the surface, the air being drawn in by fans or pumps. It is certain that the bishop realised the difficulty presented by respiration in the problem of submarine navigation and that he fully appreciated the work of Drebbel in overcoming this part of the problem.

While Harvey failed to grasp the function of respiration and set aside the suggestions that had been made by others under the crude form of the action of "spirits" on the blood, it is quite plain that these contemporaries of Harvey allowed their minds to run farther than his on the chemical side of these questions, and were closer than he to understand the nature of the physiological questions involved. His failure in this respect was probably due to his ignorance of chemistry, which Aubrey says he was wont to undervalue and speak against those who practised its doctrines.

BISHOP WARD.—OTHER CRITICISMS OF THE UNIVERSITIES.

Seth Ward, successively Bishop of Exeter and Salisbury, was a distinguished mathematician, mathematical lecturer at the University of Oxford, and afterwards Savilian professor of astronomy in 1649. He entered as a Fellow Commoner at Wadham when John Wilkins was warden and when the fame of the college attracted many men of eminence. These gatherings probably constituted the nucleus of the Royal Society. After the Restoration he was made successively Prebend, Dean and Bishop of Exeter. He was subsequently translated to Salisbury and became Chancellor of the Order of the Garter. His controversies with Hobbes and Webster

[3] Vindiciae Academiarum, Oxford, 1654.
[4] The Origin of the Submarine, Blackwood's Magazine, July, 1917.

caused him some trouble. He is the reputed author of the "Vindiciæ Academiarum," in which he replied to the criticisms of the Universities which Webster and Hobbes had published in the "Examen Academiarum."

Hobbes, the author of "The Leviathan" (1588–1679), was a somewhat bitter critic of the Universities in his day, particularly on the ground of their adherence to the Aristotelian philosophy and physics. He says, "The philosophy schools through all the universities of Christendom grounded upon certain texts of Aristotle," and these institutions were merely useful as a handmaid to the Roman religion; they rendered no knowledge of the subordinate and secondary causes of natural events or "physiques," but merely empty words. Thus they said that bodies sank because they are heavy or because they desire to be at rest. He also criticised their teaching of the civil law, but although there was doubtless much with which to find fault, he says nothing about the art of medicine or the way in which it was taught.

Dr. C. A. Mercier[5] is of opinion that Paracelsus and van Helmont had much to do with preparing the ground for the reception of Harvey's new doctrine. He thinks that by their bold challenge to the Aristotelian doctrines they rendered it possible for Harvey to state his novel opinions without being regarded as uttering blasphemy, but he is almost as severe a critic of Oxford and Cambridge as was Hobbes 200 years earlier. He quotes a statement of Averroes that Aristotle is "the perfection of truth, that his understanding attained the utmost limit of human ability," and that "it may truly be said of him that he was created and given to the world by Divine Providence, in order that we might see in him how much it is possible for a man to know." This tribute may seem exaggerated to the non-academic mind, but "it would not be considered at all exaggerated in the University of Oxford even to-day." He gives no facts whatever in support of this charge. However, there may be something in what he says, for had not Paracelsus and van Helmont shown that Aristotle could be contradicted without calling down fire from heaven, Vesalius might not have had the courage to publish his discovery of the non-porosity of the cardiac septum.

TEACHING OF MEDICINE AT CAMBRIDGE IN HARVEY'S TIME.

It is not easy to trace any evidence of the teaching of medicine at Cambridge in the time of Harvey. In Vol. III. of Venn's "Biographical History of Gonville and Caius College" (p. 253) we find the following:—

> "It will be observed that no reference has been made in the above sketch to any such officer as a medical lecturer. The fact is that though the College had for centuries enjoyed a medical reputation, no trace of any systematic instruction in the subject can be discovered until very recent times. Indeed, the earliest lecturer recorded by tradition is the late Sir George Paget, who is known to have held the office from about 1848 until he ceased to be a Fellow in 1852. Since that date such lecturers have been regularly appointed. The increased scope of the work, owing to the great addition to the number of students, was recognised in 1881, when the title was changed from Medical Lecturer to Lecturer in Natural Sciences and Director of Medical Studies. That some instruction, however, in the shape of what we should now call anatomical demonstration was occasionally given in the College can be proved by one or two interesting facts. In the first place, in the register of the parish of St. Michael—the College lies in the parish—there is an entry of burial under the date April 6th, 1601, of 'Mr. Hutton, the anatomyr of Key's College.'"

Venn took it for granted at first that this gentleman's connexion with anatomy was of the active kind, and that we had here evidence of a very early demonstrator in the College. But it now seems certain that he played the part of the subject, for it is recorded that Dr. Grimston, "one of our Fellows," made a dissection in the College just four days before. That similar instruction was carried on 25 years later seems plain from the statement of Dr. Joseph Mede, that he attended anatomy lectures in "our College." In the register of Great St. Mary's, the parish in which the schools, now absorbed into the public library, were situated, several such entries are found. The earliest of these is in 1566, when it is recorded that "John Figgen mad anotomy at the scholes and buried here, the 12th March." This was during the residence of Dr. Caius, seven years before his death.

[5] Paracelsus and van Helmont: Proc. of Royal Soc. of Med., 1915, vol. ix., Section of History of Medicine.

Professor A. Macalister informed Dr. Venn that this is the earliest contemporary record known to him of the actual performance of human anatomy in England. Again in 1628 there is an entry that "John Smith, a prisoner at the castle that was anatomised, was buried." In a note, Dr. Venn says that it perhaps accounts for the prefix "Mr." to Hutton's name, a title at that time confined by University usage to Masters of Arts and Fellow Commoners, in the direction of Dr. Caius that the burial of such anatomised bodies should be "orderly and reverential."

In the same volume (p. 47) we find the following: "On the same day (Patent Roll, August 1st, 1564) is added the Royal License, for the purchase of the houses from Trinity. A new and very important concession was included in this license. It was a formal grant from the Queen (Elizabeth) of bodies for dissection to the effect that they and their successors shall have for ever, at their free discretion and will, without the contradiction of anyone, two human bodies for anatomy, condemned by law for theft or homicide and dying in the town castle or county of Cambridge. And that they may freely dissect them at their will, with the reverence due to the human body, for the increase of medical knowledge; and this without any payment.' Dr. Caius gave careful directions in his statutes concerning these dissections, desiring that 'every year during the winter there shall be spent by the students of our College, on anatomy and on the worthy burial of the dissected bodies at S. Michael's 26/8. The president and everyone residing in College to attend the burial of the remains with as much respect and ceremony as if it were the body of some more dignified person; and this on account of the advantage they have thus received. And the Master shall see that the students of medicine do not treat the body with any lack of respect or humanity.' It is to be feared that very inadequate use was made of this privilege."

In his "Advancement of Learning" Bacon mentions that the study of medicine was based upon the use of dead bodies for dissection.

It is further evidence that dissection was practised in Cambridge in the seventeenth century that Sir Charles Scarburgh (1616–1694), who was a Fellow of Caius College, published a manual on dissection ("Syllabus Musculorum"), but there appears to have been no dissecting-room, public or private, until after the passing of the Anatomy Act, 1832. Science and its votaries, indeed, found no permanent home at Cambridge in the time of Harvey. Gilbert of Colchester, who, as Bacon says, had made a philosophy out of a loadstone, had been long removed to London, where as Royal physician he enjoyed favour and good fame, and died in 1603. Physiology as a subject did not exist, and the knowledge of the functions of the organs, apart from their structure, was elementary and very often fundamentally erroneous. In spite of Bacon's commendation, morbid anatomy was entirely neglected, perhaps because, as he pointed out, how much more difficult was this study than that of normal anatomy, the latter being presumably uniform in all healthy subjects, while the former presented endless variety. Its difficulty undoubtedly hindered any advancement, for it is not until the second half of the nineteenth century, when fairly complete post-mortem examinations were made on the bodies of all persons dying in hospitals, that the subject became familiar, and morbid appearances grew to be generally known to hospital physicians and were appreciated to a less extent from students.

IMPULSE GIVEN BY HARVEY TO BRITISH PHYSIOLOGY.

There can be no doubt that in the sixteenth and seventeenth centuries those Cambridge men who desired to study scientific medicine could not do so at home, and resorted to the Italian universities to study under such great masters as Vesalius, Fallopius, and Eustachius, whose success was rather in descriptive anatomy than in physiology. Harvey's work was of great importance because, although he added no new facts, he placed a new interpretation on what had been more or less common knowledge for 2000 years, and stimulated an advance in medicine which has continued up to the present time. This advance was mainly due to his employment of vivisection, by which method he laid the foundations of physiology and thereby of the progress of medicine. Physiology has been rightly called the Institutes of Medicine, which must march hand in hand with pathology and be its guide. Its progress depends upon the advance of many sciences, especially of chemistry, in that department which we call organic or physiological. This was a new science 40 years ago, and has been built up

within the lives of many of us. It has opened out a wide prospect and gives promise of revolutionising medical study.

The impulse that the work of Harvey gave to British physiology is shown by naming those who followed him in the next 100 years.

Thomas Wharton (1614–73), physician to St. Thomas's Hospital, studied at Cambridge and Oxford, discoverer of the submaxillary gland and author of Adenographia (1656).

George Joyliffe (1627–58), M.D. Cantab., F.R.C.P., discoverer of the lymph ducts.

Francis Glisson (1597–1677), M.D. Cantab., Fellow and President of this College, author of famous monographs on Rickets and the Anatomy of the Liver.

Thomas Willis (1621–95), M.D. Oxon., F.R.S., F.R.C.P., recognised saccharine diabetes and described the Anatomy of the Brain (the circle of Willis).

Richard Lower (1631–91), M.D. Oxon., F.R.S., F.R.C.P., performed transfusion.

Edward Tyson (1650–1708) and Samuel Collins (1618–1710) were comparative anatomists.

Clopton Havers described the Haversian canals.

William Cowper or Cooper (1666–1759) described "Cowper's" glands.

ADVANCE OF MEDICINE IN SECOND HALF OF NINETEENTH CENTURY.

But it cannot be claimed that at Cambridge or elsewhere there was any real progress in medical education. Here and there men of genius made discoveries, but they were not aided by any organisation, either inside or outside the university or medical school. Men like the Hunters did their work at their own expense, and for many years to come even the teaching of anatomy owed most to what was done in private schools.

The best that can be said for British medical education is that it was based upon some genuine knowledge of practical anatomy and bedside acquaintance with diseases. But it was not until the second half of the nineteenth century that a true spirit of reform entered into the schools. In no place was this more manifest than at Cambridge. Although it is still necessary, and probably always will be, for the Cambridge student to seek clinical experience elsewhere, he may find at Cambridge all that he desires in laboratory opportunities and, under due limitations, for clinical research.

If Cambridge has proved itself worthy of its association with the illustrious Harvey this is equally true of the great hospital of St. Bartholomew's, with which perhaps his professional connexion is more generally recognised. Harvey left Cambridge apparently as soon as he had completed his arts curriculum, taking no part of his medical education there, and although he returned there for his degree, he owes to Italy the instruction that opened the way for his great discoveries.

HARVEY AS PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

Of his labours as a physician at St. Bartholomew's we know little, and what records remain do not impress us very favourably with the work done in those days by those who held such appointments as that of Harvey. When he was originally appointed he was only obliged to attend once a week, and he was never formally required to visit the wards. The number of patients seen in the hospital must have been very small, for as late as 1749 the numbers are given as—in-patients, male 16, female 15; out-patients, male 50, female 50, each week; and there is no reason to believe that a hundred years earlier they were more numerous.

Apparently the patients were obliged to come to the doctor and not the doctor to the patients, as one of the rules says:—

"It is the duty of the matron and sisters to complain to the doctor if any poor lurk in the house and do not come to him at his sittings or take the medicine he prescribes, but cast it away and abuse it."

It is difficult for us to understand the position of such a man as Harvey holding a post which, to us, seems scarcely likely to afford him any return in the way of useful experience. The salary was inconsiderable, some £20 a year with an allowance for fuel and "livery," but it is possible that the appointment indirectly led to a certain amount of practice, for undoubtedly he made money by his profession, although Willis suggests that his brother Eliab employed the "small capital" accumulated by him during his active years of practice and before the breaking out of the Civil War to such good account that he actually died a rich man. The period during which he may have earned a considerable professional income must have been from about 1597 to 1630.

HARVEY'S LATER YEARS: HIS GIFT TO THE COLLEGE.

After the latter date, when he went abroad with the Duke of Lenox, it is doubtful whether he ever had much opportunity for practice. In 1633 he went with Charles to Scotland, whence he followed him to Oxford (1642), and in 1646, on returning to London, he resigned all his appointments, and as his wife was dead he took up his residence with his brothers Eliab and Daniel. It was then that Harvey felt himself fully justified in making over his paternal estate, then worth £56 per annum, to this College as a free gift during his life and as a provision for the objects of which this annual oration forms part.

He died at the advanced age of 80 on June 3rd, 1657, and I cannot do better than repeat the words of Willis:—

"So lived, so died one of the great men whom God in virtue of his eternal laws bids to appear on earth from time to time, to enlighten and to ennoble mankind."

THE TREATMENT OF

TRENCH FEET AND ALLIED CONDITIONS BY BIER'S METHOD OF PASSIVE HYPERÆMIA.

BY PHILIP TURNER, M.S. LOND., F.R.C.S. ENG.,
MAJOR, R.A.M.C.

(*A Paper read before a Medico-Chirurgical Society, March, 1917.*)

DURING and after a spell of severe weather we have had large numbers of cases, as doubtless all hospitals have had, diagnosed as "trench feet," "frost-bite of feet," and, of course, "I.C.T." feet. This has given me the opportunity of trying Bier's method of treatment by passive congestion in a considerable series of cases, the results of which I propose to bring before this meeting. Though I have had no access to statistics, I feel sure that the relative number of these cases is less than it was either in the winter of 1915–16 or 1914–15. This is doubtless due to the improved prophylactic measures taken, and it is rather suggestive that large numbers of cases come from certain units, while others appear to be almost free. Though prophylactic measures have been attended with so much success, there is, so far as I know, no very satisfactory method of treating cases which have once developed, and I hope that the results obtained by the method of passive congestion will lead to this method being given a more prolonged and thorough trial.

A memorandum on the "Etiology, Prophylaxis, and Treatment of Trench Foot," by Médecin Majors Raymond and Parisot, was circulated to the various hospitals, and a good many of the members of this society will, doubtless, have read it. This memorandum is of great interest and I shall refer to it on several occasions. The actual treatment recommended here consists in the application of compresses of sterile gauze soaked in a solution of powdered camphor and sodium borate in boiled water. This is covered with cotton-wool and impermeable tissue. We have had no cases here in which this treatment has been started before arrival, and we have had no opportunity of starting it here, so I have no practical experience of it; but I must say that I should have expected these cases to do better with a method in which the feet were kept dry rather than with one in which wet compresses were employed.

Causation.

Before speaking about the treatment of trench foot it will be necessary to say something about the causation of this condition and to consider the pathological changes which actually occur. This subject was investigated by Professor Lorrain Smith, Professor James Ritchie, and Dr. James Dawson, who succeeded, by submitting them to cold, wet, and constriction of the limbs, in producing a similar condition in rabbits. Their conclusions may be summed up by saying that they consider the condition to be essentially one of inflammation brought about by direct action of cold on the

[1] THE LANCET, 1915, ii., 596.

tissues, and that histological examination of the affected parts showed that the chief changes took place in the blood-vessels. They regard the influence of infecting micro-organisms as unimportant, and found that when these were present they did not seem to be the cause of the inflammatory process. They also point out that the essential difference between trench foot and true frost-bite is that in the latter the direct action of severe cold leads to the complete destruction of the vitality of more or less extensive masses of tissue, while in the former the effect of cold and wet, combined with certain factors which impede the circulation in the extremities, is to produce this inflammatory reaction.

The view of the pathology taken by Médecin Majors Raymond and Parisot in the memorandum already mentioned is very different. They regard trench foot as caused by a special infection of the foot, and claim to have isolated the infecting agent, a mould, *Scopulariopsis koningii*, which is found in the mud of the trenches, and which penetrates the feet at the site of the grooves at the side of the nails or through excoriations of the skin. They compare trench foot with Madura foot, and regard cold as only of secondary importance in its causation. The suggestion that trench foot is due to a specific infection is, I believe, quite new, and so far we have had no opportunity of searching for the presence of this mould. Captain G. Richardson, R.A.M.C., has, however, in a number of cases of trench foot in which there were sloughs, blisters, or gangrenous areas, examined the discharge bacteriologically, and in all cases found only the usual organisms one would expect to find in such lesions with ulceration of the skin. I do not think that many will agree with Majors Parisot and Raymond that cold and wet are of only minor importance. Indeed, one may go so far as to say that the great majority of medical men who have had charge of these cases, while admitting the importance of other factors, would regard prolonged exposure to cold and wet as the most essential cause of trench foot. As regards there being a special infection by a mould, one can express no definite opinion at present, but must wait further experiments and researches which will doubtless be made to test the correctness of this theory.

At present, then, we may accept the account of the pathology by Professor Lorrain Smith, Professor Ritchie, and Dr. Dawson, but in one respect I am not quite in agreement with their explanation—viz., as to the importance of the part taken by micro-organisms, especially in the more severe cases. In the milder cases, where the symptoms are limited to swelling, congestion, and alterations in sensation, the changes produced by micro-organisms are doubtless unimportant, but in the more severe cases in which one finds septic blisters, sloughs, and ulcers often surrounded by inflamed areas or actual cellulitis, and sometimes gangrenous areas of considerable extent and some depth, the part taken by micro-organisms in their production must surely be of the greatest importance. The discharge from such cases has often a distinctly foul odour, and it was in the discharge from such cases that Captain Richardson found organisms present such as are usually present in, or on, the skin. Another point as showing the importance of organisms in these cases is that tetanus has occurred with sufficient frequency in cases of trench feet as to render it desirable that the usual prophylactic dose of serum should be injected in all cases whether the skin is broken or not.

My view of the pathology of trench foot may be summed up as follows: The condition is primarily caused by prolonged exposure to wet and cold, combined with other factors which impede the circulation. These set up the inflammatory changes described by Professor Lorrain Smith. The vitality of the tissues is lowered to such an extent by this that septic organisms already present in or on the skin, possibly in fissures or excoriations, are enabled to set up more or less severe septic inflammatory processes resulting in the development of blisters, sloughs, and gangrenous areas. Needless to say, this view as to the part played by micro-organisms is derived entirely from clinical observations, but some such explanation appears to be necessary to explain the more severe cases. This is a point of considerable importance, for if it is granted that septic organisms play an important part in the process, even though that part is secondary and indirect, their intervention must be taken into account in whatever line of treatment is adopted.

Classification.

It will be convenient here, to facilitate further reference, to arbitrarily divide cases of trench feet into three groups: (*a*) Mild, where the skin is unbroken and the symptoms are swelling and "congestion" (really a bluish discoloration due to hæmorrhagic infiltration of the superficial tissues), combined with sensory disturbances. (*b*) Moderate, where blisters, or small sloughs, or black and apparently gangrenous areas are present, and the sensory disturbances are more marked. (*c*) Severe, where there are extensive sloughs, ulcers, or gangrenous areas of considerable extent involving, perhaps, several toes.

With regard to this grouping of cases it may be pointed out that the changes in trench foot are usually superficial, and that appearances are often very deceptive. It is no uncommon thing to see a patient who appears to have one or more toes completely gangrenous, or to have large patches of apparently deep and spreading gangrene on the dorsum or side of the foot, and yet on treatment such areas shrivel up and separate leaving scarcely a scar underneath. Improvement sometimes takes place very quickly, and in some of these apparently severe cases the freedom from scarring on recovery shows that the deeper layers of the epidermis cannot have been damaged beyond recovery, even though when first seen the condition may have looked so serious as to suggest that amputation of one or more toes would be necessary. I do not, of course, mean to say that gangrene of the toes and massive gangrene of the tissues of the foot never occur, or that amputation is never called for, but I am sure that this is quite rare. When extensive sloughing and gangrene are present I believe that this is largely due to a virulent secondary infection and that early treatment has been impossible.

Method of Treatment.

The question of prophylaxis is of the very greatest importance, but we are now concerned only with the treatment and not the prevention of trench foot. A consideration of the above points will show that treatment should be directed to (*a*) cleansing of the foot and the prevention of secondary infections, and (*b*) the treatment of the original inflammatory changes and also of any secondary infection which may have developed.

(*a*) *Cleansing of the foot.*—The importance of this is very rightly insisted upon by Major Parisot and Major Raymond, who recommend "a careful cleansing, almost a surgical cleansing," with special soft soap containing camphor and sodium borate. The method I have adopted has been as follows. The feet are cleaned with ordinary soap and water and the nails are also cut and cleaned. The feet are then painted over with a solution of 1 per cent. picric acid in methylated spirit, and this application is repeated at first daily and later on alternate days. This solution, which I have used and recommended from the early days of the war for the purpose of sterilising the skin in military surgery, is most efficient. It penetrates to the deeper layers of the epidermis and never causes dermatitis or irritation of the skin. Having been treated in this way the feet are wrapped in sterile gauze and left exposed to the air until the patient finds that they are more comfortable when covered by the bed-clothes.

(*b*) *Treatment of the inflammatory processes.*—Bier's treatment by passive hyperæmia is recognised as a satisfactory method of treating many conditions where there is a subacute or chronic inflammation. It is also very often successful in the treatment of chilblains. These considerations led me to try Bier's treatment for trench feet. It is applied as follows:—

As soon as the cleansing process has been carried out a constricting bandage is applied just above the knee. A Martin's elastic bandage cut in half provides a bandage of about the right length and strength. If this is not available, an elastic crêpe bandage may be used, but these are not so satisfactory, as they stretch, and the pressure exerted may diminish or even disappear after a few hours. For the first day the bandage is kept on for 18 hours. It is then removed and reapplied after an interval of six hours. It is then again applied, and on the second and succeeding days is left on for 22 hours in every 24. The bandage should in all cases be applied just tightly enough to impede the venous return, but on no account must it obstruct the arterial supply. In many cases there will be no alteration in the appearance of the limb, but in some there will be noticed a slight increase in the swelling or the leg below the bandage may feel slightly

warmer as the result of the congestion. The treatment should be painless and any complaint of pain—not slight discomfort—is an indication for the removal of the bandage. I have only had one case in which this was necessary, and even here the bandage was subsequently reapplied without any further complaint of pain.

Results.

It will now be as well to describe the effect of the treatment. It has been pointed out that sometimes there is a temporary slight swelling of the leg below the bandage. This soon disappears, and in slight and moderate cases the swelling of the foot has usually quite disappeared in 24 or 48 hours. In severe cases it may persist for longer. Pain improves rapidly, and in 24 hours has either disappeared or has markedly diminished. Anæsthesia improves steadily, but not so rapidly. In a moderate case with anæsthesia of all the toes and of the greater part of the dorsum of the foot the sensation will probably be normal in four days, with the exception of blisters and gangrenous spots where the sensation is naturally still deficient. In cases of moderate severity blisters and the gangrenous areas shrivel, dry up, and eventually separate, leaving an unbroken delicate pink skin underneath. This process is very interesting, and not infrequently there is an extensive desquamation of the skin of the affected part, sometimes of practically the whole foot. In extensive cases, after the separation of dried blisters, gangrenous spots, and epithelial scales, there is left a surface of thin, pink, soft skin resembling a baby's foot. This is naturally very tender, and though the patient can walk in soft shoes, boots cannot be worn until the thin skin has become hardened and accustomed to pressure. I cannot help regarding this desquamation and separation of dried gangrenous areas as part of the natural process of cure in these cases of moderate severity, and I think that the treatment by passive hyperæmia considerably accelerates the process. The following is an example of a case in which this occurred.

Rifleman W. F. C. Admitted Jan. 27th, 1917, discharged March 10th, 1917. On admission both feet were affected about equally. There was severe burning pain, especially at night, and anæsthesia of all toes and about half of the dorsum and sole of both feet. The third and fourth toes of the right foot were very discoloured and appeared gangrenous, as was also the little toe of the left foot. There were several other small black spots. There was slight œdema and also congestion of both feet. The patient was unable to walk. Bier's treatment commenced on Jan. 27th. Pain disappeared in 24 hours, also the swelling of the right foot, but the œdema of the left foot persisted for four or five days. By Feb. 4th both feet were practically normal, and dried-up sloughs were beginning to separate from the toes. The bandages were omitted and the patient got up. There was no swelling, but some pain on walking. On Feb. 5th he was kept in bed, and the bandages were reapplied with immediate relief, and as he had a cold with pyrexia he was kept in bed till the 10th. He then got up again and walked well without pain. The gangrenous spots separated on Feb. 12th, leaving unbroken skin beneath. From that date the patient did very well. There was extensive desquamation of the congested parts of both feet, so that on the anterior half of the dorsum, including all the toes, the skin, though unbroken, was thin, pink, and very tender. He could walk quite well in soft shoes, but was unable to wear boots. As it would be a long time before the skin would be sufficiently hardened to enable him to wear boots, and as his age was only 16, he was evacuated to England. Owing, however, to another attack of pyrexia he was not evacuated until March 10th.

In slight cases, as soon as pain, swelling, and anæsthesia have disappeared, usually after four or five days, the patient is allowed to walk in soft shoes. Then after two days boots are worn at first for half an hour daily. This period is gradually increased until the boots can be worn for two hours without discomfort, when the man is discharged to the convalescent depôt. In "moderate" cases the procedure is the same. The patient is allowed to walk as soon as possible in shoes, and is then gradually accustomed to boots. A longer period is, however, required before walking is possible and before boots can be worn. A large proportion of these cases (I should estimate about 50 per cent.) have improved sufficiently to be discharged to the convalescent depôt, but in many of the men, especially where there has been extensive blistering or many gangrenous spots with much desquamation, the feet are so tender that several weeks must elapse before they return to even light duty, rendering evacuation necessary. When the patients are sufficiently convalescent to get up the Bier's treatment is still continued, the bandage being removed when they get up and replaced when they go to bed, so that the bandage is applied for about 18 hours out of the 24. "Severe" cases always require evacuation to England, for, even under the most favourable circumstances, it must be many weeks before these men are fit to return to even light duty. These cases have also been treated in the same way, but owing to pressure on the hospital accommodation it has not been possible to keep any under observation for more than two weeks. Even in this time, however, there has been rapid improvement. Swelling, pain, and anæsthesia diminish, sloughs and gangrenous areas rapidly dry up, lines of demarcation form, granulating surfaces assume a more healthy appearance, and surrounding areas of inflammation subside. Thus even in these severe cases the symptoms rapidly diminish and the natural process of cure is hastened.

It may be asked whether the improvement in cases treated by Bier's method is really due to the Bier's treatment and not to the rest, general treatment, and picric acid application. That it is due to the former is proved by the results in some cases where one foot has been severely, the other only slightly, affected. The bandage has only in these cases been tried for the severely affected foot, while the other treatment has been applied equally to both. In such cases one nearly always finds that the foot treated by Bier's method is in a couple of days better than the other more slightly affected foot, which has not been so treated. In conclusion, I would point out that the treatment is simple and painless and requires no special apparatus beyond the bandage.

ON THE

TREATMENT OF A SERIES OF RECENTLY INFLICTED WAR WOUNDS WITH FLAVINE.

(A REPORT TO THE MEDICAL RESEARCH COMMITTEE.)

BY HAMILTON DRUMMOND, F.R.C.S. EDIN.,
AND
J. W. McNEE, M.D. GLASG.,
CAPTAINS, ROYAL ARMY MEDICAL CORPS.

With an Introduction by
Surgeon-General Sir ANTHONY BOWLBY.

INTRODUCTION.

THE report by Captain Drummond and Captain McNee is the result of a very careful study of the effect of flavine in recent wounds. It is evident that the number of cases dealt with is not sufficient to enable final conclusions to be drawn, but some of the observations are sufficiently definite for the formation of very definite opinions, and I am in complete accord with those expressed by the authors.

In the first place, it appears evident that flavine does not sterilise recent wounds, and that various bacteria grow freely in wounds treated with it.

Secondly, it appears to cause a very superficial necrosis, of the formation of a fibrinous membrane, if applied in the strength of 1 in 1000.

Thirdly, in spite of the presence of bacteria, there is a notable absence of inflammation and of septic infections, and in the cases observed there were no bad examples of gas gangrene, although anaerobic organisms were present in many wounds in large numbers.

Fourthly, healing by granulation is very slow, and the growth of granulations is evidently checked by the presence of flavine.

As far as the present series of operations goes it is clear that it does not bear out some of the claims made for flavine as a bactericidal agent or as to its harmlessness to the tissue cells. But it appears to be a useful application in the form of gauze soaked in the solution when used as a first dressing to large open wounds, and it seems to limit the power for harm of the pathogenic bacteria and to prevent the inflammation of the tissues which is usually caused by bacterial invasion. Further observation of many more cases is required to establish its value in the treatment of recent wounds.

(Signed) ANTHONY BOWLBY,
Surgeon-General.

G.H.Q., July 25th, 1917.

REPORT.

Towards the end of April a sample of flavine was placed at our disposal by Surgeon-General Sir Anthony Bowlby, to be tested in the treatment of recently inflicted wounds at the Front. The test has been carried out partly in a casualty clearing station and partly in an "advanced surgical centre," situated about four miles behind the lines. Almost all the cases were operated upon, and the treatment with flavine commenced within twelve hours after the injury; in many instances, indeed, only four or five hours had elapsed before the wounds were dealt with. All the wounds were therefore in the pre-suppurative stage, in contrast with other tests reported from home. It has been possible, through the courtesy of Lieutenant-Colonel Frankau, commanding officer of the clearing station, to keep a number of the cases under observation for several weeks, thus greatly aiding the observation on the process of healing in the wounds and the investigation from the bacteriological side.

Strength of solution employed.—The flavine was at first employed in a strength of 1 in 1000, the dilution being made in normal saline solution, in which the powder is readily soluble. This strength was used both for the primary stages and for the subsequent treatment by irrigation or otherwise. This routine was soon given up, however, as it was found that equally good results ensued if the use of 1 in 1000 solution for the first dressing was followed by the employment of a solution of 1 in 5000 for all subsequent applications. In some cases, also, where the Carrel method of irrigation was being used, the strength of the solution was further reduced to 1 in 10,000.

Number of cases and number of wounds treated with flavine.—In this test a series of 70 cases have been under treatment, but as many of the men had multiple injuries, the series comprises over 120 wounds. In some cases as many as six various wounds were present in the same patient. The vast majority of the wounds were caused by the fragments of shells or bombs, only about eight injuries from rifle or machine-gun bullets being encountered while the test was in progress.

Classification of the wounds.—The wounds may be divided into three classes, both for easy reference, and because the method of treatment differed in each class: (1) Flesh wounds, including all injuries to soft parts, without damage to bone; (2) compound fractures; (3) miscellaneous wounds of special parts—abdomen, chest, head, and joints.

Surgical methods adopted.—These naturally depended on the type of injury met with. Long incisions, with free excision of damaged muscle and fascia, must be regarded as a cardinal part of all operative treatment in recent wounds, no matter what subsequent methods are employed. After this preliminary surgical treatment the wounds treated with flavine were dealt with in the following ways:—

1. Primary suture.—This method was employed in 30 cases, all being wounds of the soft parts alone. In the majority of these, the damaged muscle removed at operation was examined bacteriologically, and shown to be infected. Fragments of cloth, and dirt, were also commonly removed from the track of the wound.

2. Drainage by tube or gauze strip, followed by secondary suture.—This was carried out in 10 cases.

3. The Carrel method of intermittent irrigation.—The perforated tubes were irrigated with the flavine solution every four or six hours. This method was chiefly employed in compound fractures and deep or extensive muscle injuries.

4. Gauze packing in open wounds.—This was found very useful in the treatment of many extensive wounds where the Carrel method was not readily applicable; for instance, in certain types of compound fracture and in amputation stumps where complete closure was impossible. The gauze packing, soaked in flavine, could be left *in situ* several days without changing the dressing.

Results of Treatment with Flavine.

1. *Cases treated by primary suture.*—Wounds treated by excision of the infected and damaged tissue, followed by primary suture, gave excellent results. In a series of 30 wounds of this kind only two broke down. In a test such as this it may be well to give brief details of the two unsuccessful cases.

CASE A.—A fragment of shell passed through the thigh from side to side, fracturing the femur and causing much comminution of the bone. At the operation, four and a half hours after the injury, many completely detached fragments of bone were removed, along with much damaged muscle. The wounds were then thoroughly washed out with 1 in 1000 flavine solution and completely closed up on each side of the thigh with silkworm gut. On the second day after the operation the patient looked ill and was febrile. On examination the wounded thigh was swollen and the skin showed a patch of discoloration near the wound. A second operation was thereupon performed, the sutures on the outer side of the thigh being released, allowing a quantity of brownish fluid, which contained abundant anaerobic bacilli, to escape. Four Carrel tubes were inserted into various parts of the wound and six-hourly irrigation with flavine was commenced. No spreading gas gangrene developed and the subsequent course of this case was uneventful.

CASE B.—This was a case of severe multiple wounds of the left thigh and buttock. There was an entry wound 2 inches above the natal fold, close to the ischio-rectal fossa on the left side, but no exit wound. At operation the missile was seen to have tracked downwards into the thigh. The popliteal space was swollen, and on making incision the missile, a fragment of shell of considerable size and embedded in cloth, was removed. The track of the missile was laid open in its whole course down the thigh, revealing much damage to the hamstring muscles. All possible damaged muscle was resected, and after washing well with 1 in 1000 flavine the wound was completely sutured without drainage. Three days later the wound gave way in its middle third, and grumous fluid, containing many organisms, escaped. Under an anæsthetic the wound was widely opened up in its middle third, to show areas of necrotic muscle which had been left behind at the first operation. Free drainage was ensured, and the patient was able to be evacuated to the base a few days later; doing well.

In contrast to these two unsuccessful results, one of the 28 successes may be quoted to show in what variety of wounds primary suture was possible.

CASE C.—A soldier was admitted with a severe shell wound of the right buttock. The entrance wound was near the sacrum, and the exit below and behind the great trochanter. The track measured 8 inches from end to end. At the operation, six hours after injury, the track was found to pass through the fibres of the gluteus maximus in all its extent. The track was laid open, and several fragments of cloth, with much damaged muscle, were removed. After arresting hæmorrhage the wound was washed with 1 in 1000 flavine and completely sutured. The wound was dressed on the third day and was perfectly sound. The patient was evacuated to the base at the end of a week, sent to England on the ninth day, and after removal of the stitches on the thirteenth day was able to walk about.

This case is especially interesting, as such wounds of the buttock often develop gas gangrene. The fragments of cloth and pieces of damaged muscle removed at operation were both infected with anaerobic bacilli.

2. *Cases treated by drainage, followed by secondary suture.*—Secondary suture gave good results in all the 10 cases in which it was adopted. It may be remarked here that in several instances the secondary suture was completed while the wounds were far from being bacteriologically sterile, but no untoward result followed. The edges of the skin, however, in wounds which have at first been left open and stitched up later do not heal as in primary suture. Healing takes place more slowly and a considerable induration can always be felt along the track of the wounds. The stitches, moreover, must be kept in position much longer than usual, and we have found that if they are removed before about the fourteenth day the edges are liable to give way.

3. *Open wounds treated with flavine.*—In this group are included both wounds treated by the Carrel method and those simply packed with gauze soaked in the antiseptic. In open wounds, which form the major portion of our series, observations on the rate of healing and on the bacterial flora have been most readily carried out, and they have therefore received considerable attention. The typical progress of an open wound treated either by the Carrel method or by the gauze packing may now be described, taking as a concrete example a flesh wound of the thigh where a considerable area of skin and muscle have been blown away, so that the wound was left open to granulate. On removal of the first dressing on the third day the wound, except for being deeply stained with flavine, has undergone no alteration in its appearance whatever, and resembles an injury only a few hours old. All signs of inflammation are wanting, and there is no pain, redness, swelling, or induration in the tissues around. The secretion from the wound is minimal in amount and suppuration is absent. The complete absence of suppuration, even

in wounds where films show abundant organisms to be present, is a very noteworthy feature in wounds under treatment with flavine. When dressed again at the end of a week the skin edges are found clean cut, no epithelial growth having taken place from the edges. The floor of the wound has by this time become covered by a closely adherent membrane, only detached with difficulty from the underlying structures. This yellow pellicle forms over whatever tissue is exposed in the wound, whether it be muscle or subcutaneous fat. Its histological structure will be referred to later. The wound from this time onward, if flavine be continued, remains in a stationary dried-up condition, showing neither signs of inflammation nor of repair. Even after a fortnight or more only small and scanty granulations can be discovered by peeling off the membrane which covers them.

It is obviously improper treatment to continue the application of flavine until such a stage is reached, and experience has shown that a wound heals with much greater rapidity if the flavine be stopped after three or four days in the case of small wounds, and after about a week in the case of severe wounds or compound fracture. If at this period eusol be substituted the yellow membrane comes away piecemeal within a day or two, and granulations appear more luxuriantly. In a very few days later growth of epithelium is well established at the edges of the wound. The wound, in short, changes its character entirely. Abundant discharge of purulent nature, containing always a great number of organisms, makes its appearance, and rapid healing occurs.

4. *Wounds of the chest, abdomen, head, and joints.*—These cases have formed such a small part of our series that no conclusions of value for this report can be drawn from them. It is of interest, however, to note that quite considerable quantities of flavine solution can be left in the abdominal or thoracic cavities without inducing the least toxic effect.

Histology of Wounds Treated with Flavine.

Portions of tissue have been removed from the edges or floor of seven open wounds under treatment with flavine and examined histologically. These examinations were made 2, 2½, 3, 8, 8, and 11 days after treatment had begun.

Up to three days the skin edges were sharply cut and unaltered histologically. The floor of the wounds showed a thin layer of fibre and polymorphonuclear leucocytes, covering a narrow zone of necrosed muscle fibres. Between the dead fibres polymorphonuclear leucocytes were fairly abundant, and in one case many large Gram-positive bacilli of the usual anaerobic type were present in the same situation and within the necrotic fibres themselves.

The material taken from a wound five days old showed a thicker covering layer of fibrin and leucocytes, with a few dead muscle fibres embedded in it. This layer, which is bright yellow in colour before fixation, is obviously from its structure composed chiefly of fibrin, although it does not give perfectly the characteristic reaction with Weigert's stain. No evidence of granulation tissue production was observed, and the skin at the edge showed no epithelial proliferation.

The tissue from two cases taken on the eighth day gave information of considerable interest. In one case wedges of skin and subcutaneous tissue were removed from open wounds on the abdominal wall and on the forearm, in which muscular tissue was involved. Both of these wounds were in a dried-up condition, and showed to the naked eye no signs of inflammation or repair. This was borne out under the microscope, epithelial proliferation from the edges of the skin being minimal in amount. The floor of the wounds was covered by the usual membrane of fibrin and leucocytes, and in one wound there was distinct evidence of early granulation tissue production in subcutaneous fat. In the other case a portion of the vastus externus muscle exposed in a large wound of the thigh, communicating with a compound fracture, was removed for examination. The whole floor of this wound was covered with a very dense yellow membrane, firmly adherent to the deeper structures. In the segment removed for examination this membrane was 2 millimetres in thickness. It was also noted that the subcutaneous fat underlying the membrane at one part of the wound had been stained bright yellow by the antiseptic dye, while the muscle remained unaffected. Below the membrane in this case granulation tissue production was evident throughout, forming a comparatively thin layer. The edge of the skin in this wound was examined.

The tissue taken from the wound eleven days old showed no new features. Granulation tissue production was well established below the yellow pellicle, but there was little epithelial ingrowth from the edges of the wound.

Bacteriology of the Wounds.

Except in the cases where primary suture was adopted most of the wounds were examined from day to day. As a routine films were made and stained by Gram's method, and both aerobic and anaerobic cultures were set up to amplify and control the observations in films. In this way a fairly complete examination of 90 wounds has been made.

A small number of the wounds remained sterile from the outset. These were cases in which it had been possible to remove all damaged and infected tissue at the time of operation, and all of these wounds were soon closed by secondary suture. It may be said at once, however, that in the great majority of the wounds no sterilisation in the bacteriological sense was brought about by the application of flavine. The wounds tended to pass through, as regards their bacterial flora, the stages now well recognised in wounds of this war. Infection by anaerobic bacilli was very common in the early stages, but tended to pass off at the end of about a week, except in the case of compound fractures, where the infection generally continued as long as the wounds remained under observation. After a few days invasion of the wounds by streptococci was almost the rule, accompanying, and often gradually replacing, the anaerobic infection. Later, generally after a week or longer, infection with a variety of other organisms was commonly met with, especially staphylococci, *B. pyocyaneus*, and a variety of short coliform bacilli. The coliform bacilli require special notice because of their frequency and also because of their marked resistance to flavine, as borne out by test-tube experiments (*vide infra*).

The broad conclusion arrived at from the bacteriological observations was that the type of infection in wounds treated with flavine in no way differed from that met with in cases where other treatments had been employed.

A point brought out incidentally was the fundamental difference between what may be termed "surgically sterile," as distinct from "bacteriologically sterile," wounds. Complete bacteriological sterility was rarely obtained, yet the patients were obviously doing well, and the wounds showed no signs of local or spreading inflammation. In several instances secondary suture was adopted with complete success, while numbers of organisms were still recognisable in the field of the microscope. Cultures, moreover, showed that these organisms were still viable.

"In vitro" Experiments with Flavine.

A few test-tube experiments, using various organisms freshly isolated in culture from wounds in our series, have been carried out by Captain J. Shaw Dunn, R.A.M.C., to control these done elsewhere. The tests were made in tubes containing 4·5 c.c. of glucose broth and 0·5 c.c. of varying dilutions of flavine. Each tube was inoculated with 0·1 c.c. of a 24 hours glucose broth culture of the organism under examination. This technique, with minor modifications, served for the examination of both aerobic and anaerobic organisms. The following results were obtained:—

1. *Staphylococcus aureus.*—Vigorous growth in tube containing 1 in 80.000 flavine. No living organisms in tube containing 1 in 10,000 flavine.

2. *Streptococcus pyogenes.*—No visible growth in tube containing 1 in 100 000 flavine. No living organisms in tube containing 1 in 100.000 flavine.

3. *Streptococcus fæcalis.*—Visible growth in tube containing 1 in 100.000 flavine. No living organisms in tube containing 1 in 50.000 flavine.

4. *B. perfringens*, two strains. The same technique was adopted here as in the other tests, except that the tubes were incubated in an "anaerobic can" in the absence of oxygen. Vigorous growth in tube containing 1 in 200 000 flavine. No living organisms in tube containing 1 in 100,000 flavine.

5. *Coliform bacilli*, four similar strains from different cases. Vigorous growth in tube containing 1 in 400 flavine. Living organisms recovered from tube containing 1 in 100 flavine.

A second series of tests, in which the dilutions of flavine were made in fresh human serum, were carried out with one

strain of a coliform bacillus. The technique was briefly as follows:—

0·45 c.c. of fresh unheated human serum was placed in each of a series of small tubes, and 0·05 c.c. of varying dilutions of flavine were added, so as to give final dilutions in the serum of 1 in 100 up to 1 in 80,000. To each tube was then added 0·025 c.c. of a 24 hours' glucose broth culture of the bacillus. The tubes were then incubated for 24 hours, at the end of which time the organism had grown abundantly in a control tube containing serum alone.

Result: Vigorous growth in the 1 in 20,000 dilution in serum; no living organisms recovered by subculture from the dilution of 1 in 8000 in serum.

This set of experiments bears out the enhancing power of serum on the action of flavine and also shows that of all the organisms tested coliform bacilli are the most resistant to the action of the antiseptic.

A further test was made to ascertain whether the enhancing power of serum on flavine was lasting or the reverse.

Five small tubes, each containing 0·45 c.c. of fresh human serum, were made up to 0·5 c.c. with flavine, so as to give a dilution in each tube of 1 in 5000 flavine. These tubes were inoculated with a coliform bacillus at varying intervals up to 90 hours after the flavine and serum were mixed together. Subcultures were made from each tube 24 hours after the culture of the organism had been added. No growth was obtained in any of the tubes, showing that the mixture of flavine and serum had retained its antiseptic power for at least 90 hours.

Conclusions.

1. Flavine appears to have many advantages as a *primary* treatment of recent war wounds. Among the advantages are:—(*a*) The absence of all toxicity, even in large wounds. (*b*) The prevention of suppuration and of spreading sepsis, as brought out in our series of test cases. (*c*) The primary dressing need not be changed for two or three days, and is then easily and painlessly removed. This may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds. (*d*) The wounds are not inflamed or painful, and the surrounding skin is never irritated.

2. Emphasis must be laid on the fact that excision of damaged tissue and mechanical cleaning of the wound are necessary preliminaries to the use of flavine.

3. Flavine cannot be classed as a success in the treatment of the *later stages* of war wounds. The wounds tend to assume a stagnant condition, during which the processes of repair are almost in abeyance. After a few days, when the danger of gas gangrene and of spreading sepsis have to a great extent passed off, flavine should be stopped and another treatment adopted.

4. In the majority of cases war wounds are not rendered bacteriologically sterile even by the prolonged use of flavine.

5. Test-tube experiments carried out with organisms isolated from actual wounds bear out the strong antiseptic properties of flavine, and their enhancement in the presence of serum. Coliform bacilli, which are a common infection in the later stages of wounds, are much more resistant to the action of the antiseptic in test-tube experiments than any of the other types of organism examined in this way.

Colonel R. J. Blackham, C.I.E., D.S.O., A.M.S., at present serving as A.D.M.S. of a division in France, was elected a member of the Society of Apothecaries of London at the annual meeting of the society held at the Apothecaries Hall, Blackfriars, on Oct. 9th.

Dr. George Wallace Eustace, of Arundel, has been placed on the commission of the peace for West Sussex. He is at present on active service in France, and he served in the South African War. He is a former mayor of Arundel.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—Founder's Day is to be celebrated at the National Hospital, Queen-square, London, W.C., on Friday next, Nov. 2nd, when the wards will be open to inspection from 3 to 6 P.M.

ETHER-OIL ANÆSTHESIA BY THE RECTUM.

BY H. M. PAGE, F.R.C.S. ENG.,

ANÆSTHETIST TO THE KING GEORGE HOSPITAL, GUY'S, AND THE WEST LONDON HOSPITALS.

With a Note by

G. B. MOWER WHITE, M.B., M.S. LOND., F.R.C.S. ENG.,

SURGEON TO THE KING GEORGE HOSPITAL, GREAT NORTHERN CENTRAL HOSPITAL, ETC.

WE owe this method of producing anæsthesia to Dr. James T. Gwathmey,[1] of New York. Before the beginning of the war I had anæsthetised a good many cases by this method and had come to rely on it entirely for operations on the thyroid gland if hyperthyroidism was present. Since 1914 I have used it for the wounded in cases of plastic face and jaw operations. Some fatalities have occurred in this particular class of case under the ordinary methods of anæsthesia. I therefore suggest the more frequent use of Gwathmey's method, which is simple, easy, and, I believe, safe.

Description of Method.

The apparatus required is very simple: An indiarubber catheter; a funnel; a medicine measure; an empty medicine bottle with a cork, to shake the mixture in—this shaking must be done forcibly for two minutes. The following is the technique I employ:—

A simple wash-out of the bowel an hour or two before the injection, in addition to the usual preliminary dose of medicine, is an advantage, but can be dispensed with if necessary. A subcutaneous injection of morphia gr. ¼, atropine gr. 1/100, is given half an hour before the time fixed for the ether-oil injection. I have used the paraldehyde rectal injections, but prefer morphia subcutaneously. From 20 to 25 minutes before the time of operation 6 ounces of a mixture containing two parts of ether to one of oil (ether 4 ounces, oil 2 ounces) are slowly run into the rectum. Six minutes are spent in making this injection. The india-rubber catheter is passed 3 or 4 inches into the rectum, never more than 4 inches.

When the operation is finished the remaining ether-oil must be washed out, using a large rectal tube and funnel. The wash-out must be done thoroughly and methodically, as on this depends the rapidity with which the patient recovers consciousness. I do the washing out, unless I have shown a nurse how to do it. The tube is gradually passed up and as much as possible of the remaining ether-oil mixture withdrawn. The tube is then drawn down again near the anus, and some water or saline is run in and siphoned off. This is repeated gradually higher up the bowel until no oil or ether can be detected in the returning fluid, when the tube is gradually withdrawn lower and 3 ounces of olive oil are passed in and left there. The temperature of the water or saline must not be above that of the rectum—in fact, only the chill off.

Following the use of this technique there have been no rectal, pulmonary, or gastric sequelæ. The return of consciousness is not delayed when the washing out is done satisfactorily.

Soldiers, unless they are very ill, are resistant to the effects of ether, and there is also the loss of ether in the breath, from the venous blood as it passes through the lungs, so that to procure a full anæsthesia in a reasonable time it is often necessary to administer a little ether with a Clover's apparatus and allow some re-breathing; if preferred, ether by the open method or some A.C.E. can be given. If it has not been possible to give the injection 20 minutes before the time for operating some anæsthetic vapour by the mouth will certainly be necessary for induction to prevent delay. After surgical anæsthesia has been produced nothing more will be required by the mouth in a large number of cases. The anæsthesia obtained is quiet and even and the laryngeal reflex is present. In some cases an occasional whiff of chloroform must be given in the usual way with a Junker's apparatus, but of course much less chloroform is required than with the usual methods, and there is the continual even stimulation from the ether absorbed from the rectum, so that with ordinary care there is practically no increased danger.

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[1] THE LANCET, 1913, i., 1756.

Cases in which the Method has been Employed.

I have used this method in face, mouth, and nasal operations 17 times; they all made uninterrupted recoveries, and there were no rectal or other sequelæ. This is not a large number of cases in itself, but I have used ether-oil rectal anæsthesia in 47 cases altogether. The operations in which I have used this method are as follows: Plastic operations on the face, operations on the jaw, radical cure of antral disease, œsophagoscopy, bronchoscopy, laryngoscopy, removal of nasal septum, cholecystotomy, cholecystectomy, gastrostomy, gastroenterostomy with partial gastrectomy, exophthalmic goitre, laminectomy, trephining, appendicectomy, amputation of the breast.

All these 45 cases recovered from the operation except 2. These 2 cases were laminectomies; they died some time after the operation from ascending myelitis. In 2 of my early cases, in which a 75 per cent. solution of ether was used, there were rectal irritation, mucus, and a slight trace of blood lasting a day or two. In another case there was looseness of the bowel for a couple of days; since then I have never used a stronger solution than 2 to 1, as recommended above.

One of the cases of appendicectomy was in a lady aged 75. She had lately suffered from influenza with pulmonary complications; her heart was weak and dilated. Acute appendicitis—appendicectomy—uninterrupted recovery.

Another, a boy, aged 11, with perforated appendix. Appendicectomy. I gave him 5 ounces of equal parts of ether and olive oil. He made an uninterrupted recovery.

The patient in one case of amputation of the breast was a big, very fat, elderly woman. She was suffering from asthma and chronic bronchitis. The complete operation was done. Recovery was uninterrupted. There was no effect whatever on her pulmonary condition.

I should say that post-anæsthetic vomiting is less frequent than with other methods. Pain is not complained of during injection when a 2 to 1 solution is used. I do not know if it would be safe to put the patient into the Trendelenburg position when using this method. I have never done so, and I have not seen any reference to this position in the American literature on the subject. Mr. Mower White, who operated in the majority of the plastic cases, has kindly added the following note.

Note by Mr. MOWER WHITE.

Mr. Page has asked me to add a few remarks to what he has written concerning the administration of ether per rectum. I have seen this form of anæsthesia used in a considerable number of cases and for many different operations. All the patients have been adults. The results have been uniformly good both as regards the condition of the patient during the operation and as regards the absence of untoward symptoms afterwards.

In operations upon the face and mouth, to which Mr. Page refers, there can be no doubt that ether administered per rectum is a far safer anæsthetic than is chloroform vapour by inhalation. Certainly in those cases upon which I have operated we have not had a moment's anxiety with regard to the condition of the patient, while at the same time the degree of anæsthesia has been sufficient for all that was required. In these operations, too, the absence of apparatus for delivering an anæsthetic confers greater freedom upon the actions of the surgeon and is a welcome relief. Most of the operations have occupied an hour, some even an hour and a half, and the anæsthesia has remained good until the end. Many of the patients were sick once after the operation, but I have seen no case of repeated vomiting.

As regards the rectum, no trouble has arisen in any of my patients, and there has been no evidence of irritation of the rectal or colic mucous membrane. I attribute this absence of symptoms to the fact that a very thorough washing-out of the bowel has been practised as soon as possible after the operation is finished. The lavage is continued until the water returns almost clear, certainly free from the odour of ether and from visible globules of oil.

In a few instances I have recommended this mode of anæsthesia for patients suffering from chronic bronchitis and needing operations. These patients took the anæsthetic well and were none the worse for it.

A CARTILAGE PROSTHESIS FOR THE EYE.

BY J. L. AYMARD, M.R.C.S., L.R.C.P. LOND.,

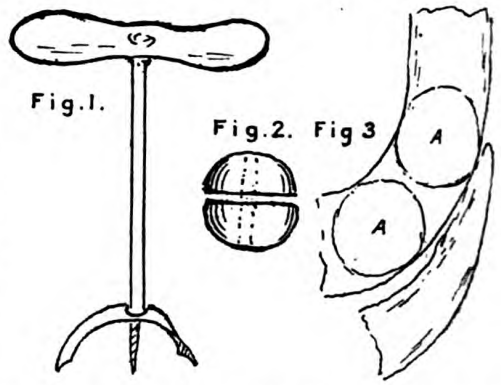
CAPTAIN, R.A.M.C. (TEMP.); QUEEN'S HOSPITAL FOR FACIAL INJURIES, FROGNAL, SIDCUP, KENT.

THE failure of the artificial eye from a cosmetic point of view depends upon two main factors, immobility and depression. The former condition is due to the absence of a mass of tissue fitting inside the artificial glass casing, and the latter to the fact that a sphere has been replaced by a shell.

However much ophthalmic surgeons may differ as to the value of metal or glass prosthetic globes, plastic surgeons in general would, I feel confident, agree with me that there can be no question as to the superiority of the use of natural tissues. With this object in view, I am now employing spheres constructed from the costal cartilage.

Since my investigations regarding the vascularity of cartilage I can, with the utmost confidence, understand how cartilage transferred, rapidly establishes fresh communications with the blood-vessels in its new vicinity and becomes fixed to the capsule in a recent enucleation or to the surrounding tissues in older standing cases.

Fig. 3 illustrates the portion, A A, of the eighth costal cartilage from which two hemispheres are trephined. These



(Fig. 2) are then either pegged with cartilage or fixed with catgut.

In primary enucleations, provided there is no sepsis, the surgeon places the cartilage sphere inside Tenon's capsule and sutures the same. He then proceeds to suture the conjunctiva. Whilst the ophthalmic surgeon is enucleating the eye the second surgeon can, with practice, produce the sphere of cartilage.

Whether cartilage spheres can be introduced into a septic eye socket or not remains to be seen, but from experience in other directions I am inclined to think that it is worthy of extensive trial as the resisting power of cartilage to sepsis in nasal cases is remarkable.

Fig. 1 gives a diagrammatic view of the trephine I use. The object of this trephine is not only to cut each hemisphere circular, but to shape it at the same time. The two points of the trephine have cutting edges, each made to cut in the same direction; the central pin is fixed and gimlet-shaped.

MEMORIAL TO THE LATE MR. CHAUNCY PUZEY, F.R.C.S.—On Oct. 10th, the anniversary of his death, a memorial service was held in the chapel of the David Lewis Northern Hospital, Liverpool, when a tablet was unveiled and a chancel-rail dedicated to the memory of the late Mr. Chauncy Puzey by the Rev. J. Bell-Cox, who paid a warm tribute to the work and influence of the deceased. The tablet was inscribed:

"To the memory of Chauncy Puzey, F.R.C.S., Surgeon and Consulting Surgeon to this Hospital 1875–1916. This tablet is erected by the committee and his colleagues in recognition of his long, valued, and devoted services. Died October 10th, 1916."

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Modern Artificial Limbs and their Influence upon Methods of Amputation.

A MEETING of this society was held on Oct. 22nd, Sir STCLAIR THOMSON, the President, being in the chair.

Mr. E. MUIRHEAD LITTLE and Major R. C. ELMSLIE, R.A.M.C., introduced a discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation.

Major ELMSLIE said that when the hospital for fitting artificial limbs was started at Roehampton in the summer of 1915 the supply was inadequate and the types available were by no means perfect. The limbs demonstrated represented a series of typical examples of the work at Roehampton. The arms represented an immense mechanical advance upon the very elementary types which were available at the beginning of the war. The function of an artificial leg was to give good stability in standing and walking and a natural gait. Hence the important points were the way in which weight was borne upon the leg, the way in which the leg was built to secure stability, and the way in which the knee and ankle were controlled. A stump might take its bearing either upon its termination (end bearing) or upon the bony prominences around the proximal joint. In general, end bearing, either complete or partial, might be expected when the bone section was through cancellous bone, when the bone was covered with thick skin and muscle or fascia, and when the skin over the stump was itself naturally adapted to weight-bearing. The type of end-bearing stump was, of course, that given by Syme's amputation. The other bearings used should be those upon the tuberosity of the ischium and upon the head of the tibia. Although a certain amount of bearing might be taken by fitting the stump tightly and so getting circumferential pressure upon it, yet this must not be trusted to any great extent, as by this method the skin was apt to be stretched tightly over the end of the stump, and if the scar was terminal or the skin thin this might result in ulceration. Major Elmslie then described the points in the fitting of a limb for amputation through the thigh. This limb was generally suspended by a sling over the shoulders, the lower end of which was attached to the leg below the knee, either directly or by passing over a pulley. In short stumps, however, a pelvic band was necessary to enable the stump to remain securely in the bucket and to control the limb. The mechanism used to extend the knee was of two sorts. The older one was a spring, either of rubber or of steel, which should act in such a way that the knee was only extended by it from the right-angled position. If it acted from a position of greater flexion than this it would prevent the man from sitting comfortably with a flexed knee. The second method was the sling from the shoulders, which pulled upon the front of the leg-piece when the shoulders were raised or when the weight of the swinging limb was put upon it, thus extending the knee. The stops which limited the movement of the knee in both directions must be so strong as to be unbreakable, even when the whole weight of the body exerted its maximum leverage upon them. In the ankle mechanism the present limbs almost all differed from the Anglesey leg in that the movement allowed at the ankle-joint was small in range (only about 20 to 30°), and this movement was stopped by the compression of springs, usually of rubber, but sometimes of steel. The small range of movement was found not to interfere with walking. Correct building of the limb was essential if stability was to be secured. Two points were essential: (1) The axis of the knee-joint must be behind the line which represented the centre of gravity of the body when it was erect, and (2) the foot must be mounted in slight equinus (20°) and must be prevented from reaching the right-angled position. The routine material for the construction of artificial legs was still willow, and as a rule the thigh and leg pieces were constructed of single pieces of wood, appropriately hollowed out, the joints being made of steel. It was not an advantage to have very lax joints in an artificial leg. As a rule the joints were lined with a bushing of leather, by adjusting which they could be made stiffer. Hip-joint amputations were fitted with a leather cup which entirely enclosed the stump, fitting it very accurately. This was attached to the trunk by a steel pelvic band, and to it was attached the limb, by a hinge joint on the outer side, and on the inner side by a steel piece which runs around on a quadrant situated upon the under surface of the leather cup. It was possible by placing the hip-joint far forward and the knee-joint far back to fit a limb which was stable with both hip- and knee-joints free, but it was customary to fit locks to both these joints, so that the man might walk with one or other free. In amputations through the knee the lower end of the stump was larger than the part higher up, therefore the front of the bucket must be cut away and filled in by a piece of leather or else an entire leather thigh-piece must be used. In either case the leg-piece was attached by outside steel joints. For amputations below the knee a wooden bucket was accurately fitted to the head of the tibia and below the patella. The weight should be borne upon these points, although in exceptional cases it might be necessary to fit a leather thigh bucket reaching right up to the tuberosity of the ischium and taking a bearing there. In short stumps a partial end bearing could often be taken by stretching a shelf across the bucket at the right level. In some cases it was difficult to stop the stump rubbing up and down in the bucket during movement at the knee-joint, but this could be got over by fixing a leather socket closely to the stump and inserting this into the bucket. As a rule the leg was suspended around the thigh by a leather corset with lateral steels hinged at the knee. When a man had worn a leg for some time, however, he could often dispense with this, having the leg attached only by a narrow band of leather fastening above the knee, to which the leg was hung by lateral straps. If this was done the foot should not be adjusted with too much equinus, as the equinus position of the foot tended to force the knee into a hyperextended position. A Syme stump was fitted into a leather bucket strengthened with steels on either side and in front, and preferably lacing behind. The ankle-joint worked against two rubber buffers as in the other types of leg. It was possible, however, to replace this mechanism by a tendon stop at the back and an anterior accumulator, and this method must be used in Pirogoff and Chopart stumps. Many other materials besides willow were now being tried, such as leather, plied wood, wood shavings and glue, celluloid and duralumin. A type of leg for a thigh amputation, which would not give way under the weight of the body when the knee was flexed, had been recently invented but was still on its trial. In general, an artificial arm should be designed to take the place of the left arm in work and must be adapted to the particular needs of the man. Movements could be transmitted to it by tension being put upon cords. In this way three pulls could be exerted: (1) by expansion of the chest; (2) by rounding the shoulders; (3) by elevation of the shoulder. These cords could be used to activate the elbow-joint, to lock and unlock this joint, and to work a mechanical hand or appliance used in its place. An arm for amputation above the elbow should be attached by a harness which passed over the shoulder, but this should limit the shoulder movements as little as possible. The arm and forearm parts should be connected at the elbow by a hinge-joint with a lock, which fixed it securely and prevented movement in either direction. The alignment of the elbow-joint need not be the true one, as it was more useful for it to flex more across the chest. In *the mechanical arm* the elbow was flexed by a cord usually activated by the pull given by rounding the shoulders. In this arm the forearm piece had the shape of the natural arm and ended in a wrist plate to which the hand or other appliance could be attached. In a *worker's arm* the forearm was represented by a skeleton of steel, usually a rod, to which appliances could be attached. If a man who had such an arm for work wished to have a nice looking forearm and hand, he could adjust a show piece representing these over the skeleton. These two types of arm, the mechanical and the worker's, could be combined by making the elbow mechanical but using a skeleton forearm. For amputations below the elbow a simple socket was used connected to an arm corset by lateral steel joints, or in the case of long stumps by lateral leather straps. In a new arm made by Williams, of Swansea, the elbow was kept permanently slightly flexed, the socket was fitted to the forearm

stump and held on by a continuation upwards of firm leather which laced around the condyles of the humerus, giving a very secure hold for a working arm. In wrist amputations and other amputations low down in the forearm it was important to preserve the movements of pronation and supination. It might be possible to do this by omitting the steel joints at the elbow, or the movement could be secured by the pronation arm made by Hobbs, in which ball and socket joints allowed the forearm socket to rotate upon the elbow. For working men appliances fitted to the wrist-plate were generally more useful than a hand. The number of appliances made might be divided into the following classes: (1) Simple hooks, rings, and grips, without movement; (2) similar appliances in which there is mobility in one or more directions representing wrist movements; (3) grips opened or closed by the pull of a cord from the shoulder. Many of the appliances invented by Adams, Hobbs, and Anderson would be seen on the arms worn by the men present. The hand was not so useful in mechanical work as the appliance, but for men in professional work a good hand was an essential. In most cases the hand supplied was a simple one, with a spring-grip to the thumb, and often with the ring and little fingers curved into a hook and reinforced for carrying. But mechanical hands were possible and useful for certain men. The first essential in a mechanical hand was that the grip should not be a simple spring grip, which would always be forced by a very slight leverage from without; the mechanism should be such as could not be forced except by breaking the hand. Such a mechanism had been invented in a very simple and light form by Hobbs, and adapted to a number of different shaped hands. In order that the hands or appliances might be removed at will and replaced by others it was essential that they should all be detachable, and for quick detachability the screw method was being replaced by others. In addition to the makers named above the following had examples of their limbs at the demonstration: Messrs. Rowley, Hanger, and the Essential Limb Co., for lower limbs; and Messrs. Blatchford for arms.

Mr. MUIRHEAD LITTLE said that the chief duties of the lower extremity were to support the weight of the body at rest and in motion, and to act as the propellent force in the process of locomotion. End pressure and leverage were the strains to which it was most exposed. The upper extremity was mostly employed in prehension and traction—functions to which the foot of boot-wearing man was a stranger, and end-pressure therefore was not one of the most important strains to which it was exposed, while leverage was all-important. In both the upper and lower extremities provision had to be made to maintain the appliance in place when in action and also, when at rest, against the action of gravity. Weight was borne (*a*) by direct pressure of a part of the body downwards, such as the end of the stump or of a convenient bony process, such as the tuberosity of the ischium; or (*b*) by oblique pressure, when the artificial socket formed a more or less conical cavity into which a conical portion of the body fitted. These two were often or generally combined. Leverage was exerted by the lateral surface of the stump pressing against the side of the surrounding socket. An ideal amputation stump should be as long as possible; it should be covered by sound, moveable, soft parts; and the scar should be placed in a position where it would not be exposed to pressure, and it also should not be adherent to the bone. It should have enough muscles attached to it to move it with adequate force and no inflamed or hypersensitive nerve ends should be palpable in it. The end or ends of the bone or bones should be rounded so as not to hurt the soft parts under them, and the blood-supply should be free and the skin well nourished. Consideration and experience of modern artificial limbs led to the conclusion that, except in the cases of the hip and shoulder, exarticulations were to be avoided, and that amputation through the limb segment above the joint was to be preferred. In the lower extremity a stump capable of bearing some at least of the body-weight on its end should be aimed at. Every pound of pressure here meant less pressure on other parts, which in some cases did not bear it well. An analysis of the records of 549 cases of amputation of the lower extremity seen recently at Roehampton showed that the stumps in the lower third of the thigh are much more sound than those in the upper and middle thirds, which latter region was the seat of nearly half of the total number (43 per cent.). In the upper extremity the question of end pressure did not arise and here the condition of the lower part of the anterior and external surfaces of the stump was of most importance, because these surfaces had to take much of the pressure of the leverage action on the bucket. Many arm stumps with large adherent guillotine scars covering the end of the bone had been found to be quite satisfactory in practice. The presence of osteophytes was rarely any hindrance. These were seldom large except in the thigh and then they were usually situated about the femoral insertions of the adductor muscles which were not exposed to much pressure. The different sites of amputations called for special consideration. Speaking of the upper extremity he said that a forequarter amputation gave no choice of flaps. The resulting scars would generally bear a properly moulded shoulder cap and an artificial arm with some movements. In exarticulation at the shoulder the lines of scar should avoid the clavicle and the prominent bony ridges of the acromion, &c., for on these the shoulder cap must press. Amputations in the upper third of the arm offered very little hold for the socket of an artificial limb. Owing to the arrangement of the muscular attachments around the joint the upper three inches of humerus, or even more, were unavailable, and as in the arm of average length the upper third was only a little over four inches long, very little was available even in an amputation at the junction of the upper and middle thirds. A good deal could be gained by removing wholly or in part the folds of the axilla—i.e., the pectoralis major and the teres major. This had been done with good result and seemed to be an operation worth doing in suitable cases. The latissimus dorsi had not been interfered with so far as he knew. It was less in the way than the other two muscles. A gain of one inch of stump here was of the very greatest value, and as large adherent scars covering the end of the bone were comparatively unobjectionable in the arm, the surgeon in amputating above the middle of the shaft of the humerus should save as much bone as possible, even though there might not be skin enough to cover it completely. The drag upon the adherent scar which gave trouble in the lower extremity is seldom complained of in the upper, owing to the absence of much upward thrust. The objections to amputations through joints in general applied to the elbow in particular force owing to the shape of the bones. If it was impossible to get a forearm stump extending at least an inch and a half below the insertions of the tendon of the biceps, amputation above the condyles of the humerus was to be preferred. The action of the biceps tendon which tended to throw off the bucket when it contracted in flexion was one of the chief difficulties in these short-forearm stumps. Unfortunately, this tendon could not be spared, and its removal was out of the question. The remains of the bellies of the flexor muscles, however, were of no use, and had been removed in some cases with more or less advantage, enabling a better grip on the stump to be obtained. The middle third of the forearm gave good stumps, but the lower third was not a favourable site. Many stumps were cold and cyanotic and the skin tightly stretched and adherent. Moreover, the ends of the bones were often tightly soldered together by fibrous tissue or even bone, and the movements of pronation and supination were lost. Below the wrist it was worth while to save the carpus and base of the metacarpus if possible, provided movement was preserved. The short stump thus formed could be used to actuate a movable thumb with considerable force by means of a simple appliance. If one active finger or a thumb were left it was easy to fit a stump to which it could be opposed, and thus to give the picking-up action and the power of holding a pen. In the lower extremity he considered that exarticulation or amputation through the neck of the femur was better than amputation in the upper third of the thigh. The short stump was unable to move the lever formed by the thigh bucket with sufficient force, no matter how light the limb might be. Such improvements had been made in fitting what was rather inaptly called a *tilting table* that patients who had tried both the ordinary thigh bucket and this appliance usually declared that the latter was much the best. The middle third was the site of nearly half the amputations of the lower extremity treated recently at Roehampton. In this region the objects aimed at should be a non-adherent scar behind the bone and a good disposition of the muscular masses on the inner side. If the great adductor muscles were allowed

to retract too much a too conical stump resulted, and the bunch of soft parts at the top of the thigh just below the pubes formed a serious obstacle to the fitting of a socket. The tendons and fasciæ should therefore be sutured if possible over, but at least near to the end of the bone. The lower third of the thigh, just above the condyles, offered the best thigh stump for fitting with an artificial limb. If a long anterior flap was made, even though there might be an adherent scar behind the bone, a good end-bearing stump often resulted. If the patella could be securely fixed to the end of the bone so much the better. The general objections to exarticulations applied to the knee-joint. In the leg below the knee the most favourable site was the lower part of the middle third. With skilled fitting, however, even very short stumps were useful. Amputation in the lower third of the leg seldom gave a satisfactory stump. The bone surface at the end was too small for good weight-bearing, and the skin was often badly nourished, cold, and cyanotic. Syme's amputation was deserving of its great reputation. If properly done it gave a painless weight-bearing stump. The bones should be sawn through well above the internal malleolus so as to avoid too bulbous a stump, and care should be taken to make the section at right angles to the long axis of the whole leg and not at right angles to the often incurved lower fourth; otherwise a varus stump was likely to result. Too low a section left no room for a strong transverse ankle-joint, and a too voluminous heel-flap meant an unsightly artificial foot and boot. Of Pirogoff's amputation experience at Roehampton was small and unfavourable. If the os calcis was not united to the tibia by bone it would sooner or later tilt over and cause pain, and in any case the stump was too long for the fitting of the best type of foot. Chopart's amputation gave a good bearing surface, but generally the calf muscles pulled up the heel and tilted the lower end downwards, and painful pressure on the scar resulted. The stump was too short to give a spring to the gait, and it was well-nigh impossible to fix any prolongation on to it.

Speaking of operation cases sent over from France, Major JOCELYN SWAN asked whether the speakers considered that the secondary amputation should be performed at once while the limb was still in a septic condition, or whether it should be postponed till healing had taken place.

Lieutenant-Colonel D. ELCUM, I.M.S., asked how long an artificial limb would last, and whether the parts of a limb which were worn out could be renewed by anyone except a skilled maker.

Mr. MUIRHEAD LITTLE said that the secondary amputation should be done as late as possible. An artificial leg would last about seven years, but probably something would require to be done in about a year and a half. Arms had only been in existence about two years, so it was not known how long they would last. Many of the men who came back to Roehampton after six months were those who had used them for very hard work. Centres for repair were being started in provincial towns, which would save the trouble of coming to London.

Major ELMSLIE said that the longest time an arm had been in use was one year. He considered that the fitting of an arm was only the first part of the business. The man should then be trained to use his arm in a general way, and later to make use of it in a special way, according to his particular trade or occupation.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on Oct. 16th, Captain W. Griffith, the President, being in the chair.—The President announced that Dr. Morgan Dockrell, who was the first president of the society, had presented a collection of books on dermatology which was to form the nucleus of a permanent library for the use of the society.—The opening address of the session was given by Dr. Leonard Williams, entitled "The Ideal Dermatology."—The following clinical cases were shown:—Dr. J. L. Bunch: Two cases of Rodent Ulcer, the lesion being situated on the left orbit in the one case and on the left cheek in the other case.—Dr. Morgan Dockrell: A case of Epithelioma supervening on Lupus Erythematosus.—Dr. W. Knowsley Sibley: A boy who had suffered with Pityriasis rubra pilaris for seven years and was just developing an attack of Guttated Psoriasis.—The President: A case of Xanthoma Multiplex, also a case of Multiple Lupus in a boy who had exactly 80 distinct lupus nodules present.

Reviews and Notices of Books.

Diseases of Occupation and Vocational Hygiene. Edited by GEORGE M. KOBER, M.D., LL.D., Washington, D.C.; and WILLIAM C. HANSON, M.D., Belmont, Mass. Philadelphia: P. Blakiston's Son and Co. 1916. Pp. 918. Price $8.

ANY contribution to the literature of diseases of occupation is to be welcomed, particularly at the present time. The latest addition is the work of many American authors, with contributions by Sir Thomas Oliver and Dr. T. M. Legge, of England, and Professor Dr. L. Devoto, of Milan. The editors, Dr. George M. Kober and Dr. William C. Hanson, in their foreword set out that their aim has been "the presentation of the basic data concerning the diseases of occupation in such a way as to render them available not only to physicians, but also to employers, employees, efficiency experts, public health officials, and legislators." With this object in view the work has been divided into three parts: Part I. deals with the Specific and Systemic Diseases of Occupation, Part II. with the Causation and Prevention of Occupational Diseases and Accidents, and Part III. deals with Statistics and Legislation bearing on Occupational Diseases. Each part is divided into chapters and sections, and the references, which are numerous and valuable, are given at the end of each section. Some degree of repetition is inevitable in a work contributed by many authors, several of whom deal with the same subject from a different aspect, but in future editions unnecessary repetitions should be reduced.

Part I., which deals with the Specific and Systemic Diseases of Occupation, includes the more common forms of industrial poisoning, such as poisoning by arsenic, brass, lead, mercury, &c. Lead poisoning is fully described, but we cannot agree with Dr. H. Linenthal, who contributes a section on the early diagnosis of lead poisoning, that a history of exposure to lead justifies the diagnosis of lead poisoning in patients presenting obscure symptoms which otherwise cannot be explained. We notice that throughout the section on lead poisoning by Sir Thomas Oliver no reference is made to the valuable experiments carried out by Mr. Kenneth Goadby as to the effect on animals of ingestion and inhalation respectively of lead dust. These experiments show that lead is far more poisonous when inhalaled than when absorbed in any other way, a point to which Sir Thomas Oliver omits to draw attention.[1] Poisoning by the inorganic gases and diseases of the chemical industry in general are not so fully dealt with as we think this important branch of industry deserves. On the other hand, a section is devoted to a rare form of disease—viz., poisoning by manganese. Similarly a section describing the effects on health produced by diminished atmosphere in ballooning and aviation, by Dr. Kober, shows the scope of the work.

Systemic occupational diseases are dealt with in two chapters—Chapter I., Dust Diseases of the Lungs, by Sir Thomas Oliver; Chapter II., Diseases of the Blood, Circulatory System, and Kidneys, by Dr. Thomas L. S. Leigh. There does not seem to us to be much advantage in describing the symptoms, pathology, and treatment of diseases such as acute and chronic endocarditis and acute and chronic nephritis in a work of this nature. The subjects are treated shortly, and we cannot find that a short epitome of these diseases is of value to the medical reader, who can study the subjects in detail in medical text-books. To the non-professional reader a little knowledge of symptoms and treatment may, we feel, be a source of danger, and this is a treatise which makes a fair appeal to a lay public. Occupational diseases of the Nose, Mouth, and Throat, and of the Eye and Skin, are dealt with by separate contributors. Occupational Diseases and Injuries of the Eye, by Dr. Würdemann, occupy another chapter, and here, for example, we think that the subject cannot be dealt with at sufficient length to enable the instruction and conclusions to be of practical value For the diagnosis of foreign bodies within the eye Dr. Würdemann suggests the use of the giant magnet. He states, however, that this method of examination is somewhat dangerous. We entirely agree with this statement,

[1] Lead Poisoning and Lead Absorption, Legge and Goadby. London. 1912.

and would suggest that such a method can only be safely employed by a skilled ophthalmic surgeon. Occupational affections of the skin by Dr. Brown, of Boston, considered from the point of view of the various trades and callings, shows the variety of occupations which produce skin affections, and deals with such widely different occupations as housemaids, musicians, and surgeons. An attempt to include all who are likely to be affected by skin diseases has, we think, tended to crowd out some workers in the more important industries where such diseases in acute and severe forms are commonly met with. Little or no mention is made of dermatitis affecting workers in the nitro-derivatives of benzol or toluol. A chapter on cancer and occupation is of interest, and includes effects produced by exposure to X rays and radium. Part of this chapter is occupied with a brief description of the theories as to the causation of cancer, contagion and house infection, &c. We hardly think such a study comes within the scope of the work.

Part II. deals with the Etiology and Prophylaxis of Occupational Diseases and Vocational Hygiene. Dr. Kober, one of the editors, contributes largely to this part. Much of his contribution is in the nature of a résumé on personal hygiene, and again we have a protest to utter against redundancy. We do not in any way minimise the value of personal hygiene in the prevention of occupational disease, but the omission of a consideration of this subject on general lines would in no way diminish the value of the essay. The subsequent sections of this part deal with the various industries and industrial poisonings, and special accidents attaching to them. Much of this is in many instances a repetition of Part I. Some contributors briefly outline the various processes of manufacture in which industrial poisoning is to be met. A few deal with the special preventive measures applicable to the various industries. We notice the brief reference to poisoning by trinitrotoluene and tetrachlorethane. In view of the importance which poisoning by these substances has assumed, we feel sure the subject will be more fully dealt with in future editions. One section is devoted to the subject of vocational hygiene of the liberal professions, public service employees. Several tables, one giving a list of industries and the poisons likely to be met with in each, and a series of mortality and morbidity statistics complete Part II.

Part III., the Relation of Hospital and Medical School Work, Statistics, Government Study and Legislation to Occupational Diseases, includes an interesting chapter by Professor L. Devoto, of Milan, in which he describes the Milan Clinic for Occupational Diseases. This should be read by all interested in occupational diseases and should prove an incentive to other countries to follow the lead given by Italy. Frederick L. Hoffmann, LL.D., contributes a chapter on the mortality from pulmonary tuberculosis and dusty occupations. The value of this chapter is diminished by the absence of a more definite analysis of the various dusts dealt with, but it contains a valuable lesson by showing the high rate of mortality from pulmonary tuberculosis among workers in dusty industries. A chapter on the use and the fallacies of statistics may be of interest and serve as a preliminary study to those who have no knowledge of the subject but who wish to take an intelligent interest therein. The remainder of Part III. is concerned with legislative measures and the notification of occupational diseases.

We congratulate the editors on the result of their work, which is well illustrated throughout.

Text-book of Ophthalmology. By Hofrat ERNST FUCHS, Professor of Ophthalmology in the University of Vienna, Authorised translation by ALEXANDER DUANE, M.D., Surgeon Emeritus, Knapp Memorial Hospital, New York. Fifth edition. London and Philadelphia: J. B. Lippincott Company. 1917. Pp. 1067. Price 30*s*.

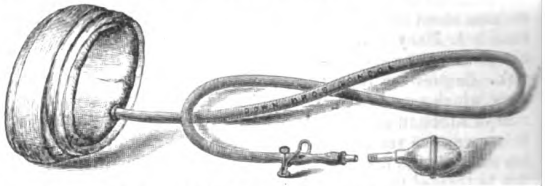
IN previous reviews of this work we have always expressed the opinion that it is the best of the larger text-books of ophthalmology. In the presence of several excellent competitors it can only retain this proud position by keeping well abreast of the times. The new (fifth) edition not only sustains but enhances its high reputation. Though Dr. Duane is very careful to distinguish his additions to the original by the use of square brackets, they are so ubiquitous that it is difficult to apportion the author's and the translator's contributions. A rough estimate indicates that the latter is responsible for nearly half the book. In previous editions the joins in the mosaic have been very evident. In this edition, in spite of the brackets, the welding is very much more satisfactory. Another great improvement consists in changes in the arrangement of the original text. The many pages of remarks in fine print, which were formerly massed as an appendix at the end of chapters or major divisions, and whose considerable value and interest were thus obscured, have been split into shorter sections, each placed in direct juxtaposition to the portion of the text to which it relates. Considerable additions have been made to the chapters on glaucoma, diseases of the retina, and disturbances of motility, and to the sections on refraction, accommodation, and operations. Dr. Duane's well-known interest in ocular paralyses is given perhaps rather too free play, somewhat to the detriment of proper balance. On the other hand, some of the chapters on operations might be still further elaborated with advantage. Other important additions deal with tuberculin and vaccine therapy, the visual field and colour testing, the mapping of scotomata and the blind spot, the etiology of iritis, suppurative choroiditis, retinitis exudativa, and so on.

The book is an admirable exposition of the subject and is well adapted for advanced students. We think, however, that it has reached the limit of size suitable for a text-book. Any further additions should be thoroughly incorporated and room should be made for them by careful compression of the existing text.

New Inventions.

A PNEUMATIC TOURNIQUET FOR AMPUTATIONS AND OTHER PURPOSES.

SEVERAL years ago I had made a pneumatic tourniquet resembling the one used by Mr. R. H. Jocelyn Swan for intravenous injections. In this case, however, the tourniquet is adapted for use in amputations and in the arrest of severe hæmorrhage from the limbs. It has the two additional advantages that it is easily sterilised and can be easily controlled by an anæsthetist standing at the head of the patient. The tourniquet consists of a rubber bag two inches wide and some 20 inches in length (for use with adults). Halfway along one edge of the bag is inserted the inlet tube T-fashion. The inlet tube is 4 feet long and ends in a stout bulb. The bulb is fitted with a valve, as in the Riva-Rocci apparatus, and a simple spring clip. The



bag is fitted in a sterilisable cover and has a lead back to prevent rolling when distended, this improvement being originally suggested by Colonel A. Fullerton. In use the bag is wrapped round the limb, the inlet tube passing towards the head. A 2½-inch linen bandage is then firmly applied over the tourniquet and the bag inflated till the distal pulse disappears. In the course of an amputation, when all bleeding points have been secured the anæsthetist, by manipulating the valve-end, can release the pressure, pumping up again if bleeding recommences. In operating on patients with brittle arteries less damage will be done by this tourniquet than by any other, because the pressure is only just sufficient to compress the artery, and can be released immediately the artery is tied. This tourniquet should prove useful in the transport of wounded when there is fear of hæmorrhage. The bag and bandage can be applied beforehand, the actual inflation being all that is required if the emergency arises. In this case one inflates till the bleeding stops, a proceeding which could be left to a comparatively inexperienced person.

The makers are Messrs. Down Brothers, of St. Thomas's-street, London, S.E.

J. V. FIDDIAN,
Captain, R.A.M.C.

SUPPLEMENT to THE LANCET, October 27, 1917

METEOROLOGICAL OFFICE

Advisory Committee on Atmospheric Pollution

REPORT ON OBSERVATIONS IN THE YEAR 1915-1916

Forming the Second Report of the Committee for the Investigation of Atmospheric Pollution

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INTRODUCTION.

SINCE the publication of the Committee's first Report, for the year 1914–15, some difficulty has been experienced owing to lack of funds. It will be remembered by those who have read the Report above referred to that this Committee is a purely voluntary body, relying for funds upon outside support. The work falls into two main divisions:—

(1) The organisation of the whole scheme, preparing designs of gauges and instructions for their operation as well as for analysis of deposit; collecting, filing, tabulating, discussing and publishing the results, and generally controlling and coördinating the work.

(2) The establishment and operation of the gauges, collection and analysis of deposit, and the sending of monthly returns to the Committee.

The cost of No. (2) is borne by the observing stations, and is a very important item, amounting to about £1000 for the year, without counting the cost of providing and installing the gauges. The trouble has been to finance No. (1), as it is hardly to be expected that the bodies which bear the cost of No. (2) should also bear that of No. (1).

In view of the above considerations, application was made to the Department of Scientific and Industrial Research for a Government grant in aid of the work included under No. (2), and the Committee have now gratefully to acknowledge the generous help given to them by the Department.

Not only have their financial difficulties been met by a substantial grant, but the work has been given official approval and status by placing it under the control of the Meteorological Office. The Committee has been constituted an "Advisory Committee on Atmospheric Pollution" to the Meteorological Office, and its original title has been altered accordingly. At the same time little change in the personnel has been made, with the exception that the Department of Scientific and Industrial Research have power to appoint a representative, and it has also been decided to ask each coöperating authority to appoint a representative. It will thus be seen that a new impetus has been given to the work, and although, strictly speaking, the changes which are above indicated took place during 1917, yet as their effect is retrospective, as above indicated, it appeared best to set them forth here.

It was originally intended, on receipt of the grant above mentioned, to publish the Reports for 1915–16 and 1916–17 at the same time, as the latter year's returns are practically all in. Further consideration indicated the advisability of placing the 1915–16 results before the public at the earliest possible moment, instead of delaying them to incorporate the 1916–17 results in the same Report. It was therefore decided to do this, but it is hoped that the publication of the third Report will not be delayed more than two or three months behind the present one. And future Reports should be made public very shortly after the conclusion of each year's observations on March 31st.

The Committee felt that the question of carrying on its work and that of the observing stations during the war required very careful consideration, and, after full discussion, it was decided that it would be inadvisable to stop the work during the war if it could be carried on. In coming to this decision the importance of continuity in the collection of such statistics was kept in mind, as well as the advantages which would arise from having all the data on atmospheric pollution ready by the time peace returned, when people's minds would again find interest in more peaceful problems.

The connexion between atmospheric pollution and fuel economy was not lost sight of, and at a time when this is of such vital importance as the present the loss of combustible matter represented by the soot suspended in the air appeared a legitimate subject for investigation.

In considering the subject from the point of view of fuel economy it is interesting to note that, taking the case of the County of London alone for the year 1915–16, and basing the figure upon the average returns from the different observing stations, the total quantity of matter deposited from the air during the year on London was approximately 54,200 tons, and by reference to the figures shown in the tables it will be seen that this deposited matter is, to a great extent, derived from fuel waste in the form of smoke. The six months April to September were responsible for about 24,900 tons, and the six months October to March 29,300 tons. Not only is it necessary at present to scrutinise carefully every source of waste, but it is equally necessary to conserve the health and physical energy of the people. It may not be out of place in this connexion to mention that the approximate quantities of air, solid food, and water required by an adult human being per day are :—

Air	30 lb.
Food	2·7 ,,
Water	4·5 ,,

In the first Report, for the year 1914–15, maps were given showing the positions of the deposit gauges for the stations then at work; in the present Report, therefore, these maps have not been reproduced, but in the case of new observing stations not already included in the previous Report maps are now given (pp. xix. and xx.) and the position of each gauge is indicated in a similar way to that adopted in the 1914–15 Report—that is, a black circle 1 inch in diameter is placed upon the map so that its centre coincides with the position of the deposit gauge.

It has been naturally unavoidable that owing to the pressure of other work and the depletion of staffs arising from the war certain stations have found it impossible to continue observations, so that the list of observing stations for the year under consideration will be found considerably curtailed as compared with the preceding year. It may be stated, however, that the cessation of observations is in most cases only temporary, and it is confidently expected that when peace conditions return the work of collecting, analysing, and reporting the results will be again resumed in most of the stations referred to.

STANDARD GAUGE.

The standard deposit gauge, fully described in the first Report, has continued to fulfil its function satisfactorily. Certain difficulties have, however, become apparent during the course of the investigation. For example, the porcelain glaze of the collecting vessels has in one case shown a slight solubility in water, with an accompanying addition to the collected water of the material from the enamel. This has, however, been very slight, and where it has occurred there has been no difficulty in separating the constituent derived from the glaze, such as lead, from those normally deposited from the atmosphere. This difficulty has only been noticed in the case of one gauge—that of York; and although the presence of lead in the water was at first attributed to contamination from the lead paint which coated the outside of the gauge vessel, it was subsequently found that the source of the lead was the enamel coating the inner, or catchment, surface of the vessel. Of course, it would be preferable to have an insoluble enamel for this purpose if it were possible to obtain it, but the contamination fortunately being due to a material not normally present in the atmosphere does not affect the results.

Again, during the winter of 1915 several months' observations were lost owing to bursting of the bottles by frost. This is, however, difficult to avoid, as in an exposed position no amount of protection by jacketing or enclosing is sufficient to prevent the water freezing when there is a long-continued frost, although for frosts of short duration enclosing the collecting bottles in a wood casing surrounding the stand of the gauge is an effective protection.

The efficiency of this gauge has been criticised on the ground that the rainfall governs the amount of impurity collected, and that the gauge does not measure the total impurity present in the air, since this is not all deposited, some remaining in suspension.

It therefore becomes important to point out that the primary function of the gauge is to collect deposited impurity so as to compare the measurements of the amounts which fall in different localities. The amount collected is not the same as the amount in the air at any one time, but in the long run the greatest amount is likely to be found in the gauge which is exposed to the atmosphere richest in pollution. Naturally rainwater is also collected, but the gauge does not depend on rain for its action, as in dry weather it also collects whatever falls into its catchment area.

The fact that measuring deposited impurity cannot provide complete information as to the degree of atmospheric pollution is very obvious. This point was carefully considered by the Committee at the start, and was dealt with in their first Report under "Methods of Work." It is therefore unnecessary to go over the ground again now, but it may be well to indicate that although a complete statement as to air pollution should deal with suspended as well as deposited matter, the measurement of either alone may be very valuable.

In order to obtain information relative to the very finely-divided matter which remains suspended in the air for long periods, the Committee have adopted a standardised form of filter, and this is available for the use of those who wish to obtain more complete information than measurement of deposit alone can give. This filter permits of taking an observation in about 10 minutes and has been exhaustively tested and calibrated.

Relative to the criticism that the rainfall governs the deposit, it will be shown in the present Report that this is not the case. The whole question of the relation of deposit to rainfall has been dealt with rather fully, and it will be seen that while the quantity of soluble matter deposited is evidently affected by the rainfall, this is not true to anything like the same extent for the insoluble parts of the deposit.

ANALYSES.

Since issuing the last Report the Committee have had the advantage of a wide experience as regards the chemical procedure. Several difficulties were encountered, but the more important of them have been investigated, and where it appeared advisable from the point of view of scientific accuracy, the "Instructions for Analysis" have been revised.

It has been thought that an account of this part of the work will be of interest, and also useful in the criticisms of the compiled data, and with this in view it has been included in the present Report.

The Committee have received from several of the chemists who are coöperating in the investigation some suggestions and criticisms, and wish to take this opportunity of expressing their appreciation of the assistance derived from them. A Sub-Committee was appointed to inquire into the chemical procedure and to make such recommendations to the Committee as appeared necessary in the light of more than a year's experience.

In its investigations the Sub-Committee had the advantage of making use of the gauges in the County of London, and for this they are indebted to Dr. W. H. Hamer, the Medical Officer of Health to the London County Council, who kindly allowed the Council's chemist, Mr. J. H. Coste, to coöperate.

Errors and Difficulties arising from Algal Growths.

Mr. A. R. Tankard, of Hull, drew the attention of the Committee to this matter. The algal growth rendered filtration a tediously slow process, and to some extent was a source of error in the determination of undissolved matter and ammonia. It seemed highly desirable that some steps should be taken to prevent this growth.

Several methods were suggested, the chief of which were: the use of

1. Formaldehyde.
2. Mercuric chloride.
3. Metallic copper.
4. Copper sulphate.

Mr. Tankard kindly undertook to investigate the effect of formaldehyde. It was anticipated by him that the ammonia determination might be interfered with, but, owing to the great dilution, it was thought that this would not occur to a serious extent. His experiments proved, however, that the ammonia almost entirely disappeared. In a particular case he showed that water containing 0·006 gramme ammonia per litre contained only one-tenth of this amount after three weeks in the presence of formaldehyde (1 part in 20,000). In another case 0·0007 gramme of ammonia per litre was reduced in two weeks to 0·00014 gramme. It was, therefore, concluded that the use of formaldehyde was not permissible.

On the other hand, Mr. Tankard made some interesting observations on the change in the ammonia contents of the water in the absence of formaldehyde. To quote his own remarks:—

"In the absence of formaldehyde the ammonia in rain-water tends at first to diminish in amount, but after a lapse of time a rapid growth of fungus sets in and the amount begins to increase in some cases. For instance, the August rain-water here contained 0·0006 gramme per litre when first examined; a week later the amount was 0·0005 and a fortnight after the first determination the amount had fallen to 0·0003; then the quantity of ammonia began to increase and ten days later still had risen to 0·0005 gramme per litre. As the growth of fungus, both in rapidity and amount, will depend upon a number of factors not readily controllable it cannot be stated that at the end of the monthly period the ammonia found will be a correct indication of the amount washed down from the atmosphere."

Mercuric Chloride.—This was considered by the Sub-Committee, but in view of its uncertain behaviour when exposed to heat during the process of analysis it did not seem very promising. Allowance would, of course, have to be made in the analysis for the mercuric chloride used.

Metallic Copper.—The growth of bacteria in the water contained in gas-holder tanks and similar apparatus has been the subject of investigation in connexion with the operation of gas-making plant, and it has been observed that these bacteria can decompose dissolved sulphates with the evolution of H_2S. A point that was observed was that the presence of metallic copper prevented in a large measure the development of bacterial growth. Probably minute traces of a copper salt were formed by the action of the water upon the metal and dissolved in the water, sufficient to prevent within a certain radius of the metal the growth of the bacteria.

It was suggested that if a wire spiral or a strip of pure copper were suspended from the cork of the collecting bottles the growth would be prevented. The dissolved sulphates in the water would probably form copper sulphate with the metal, and this would act as an antiseptic. In this case no correction would be necessary for the SO_3, but a small deduction from the total solids and total dissolved matter would have to be made owing to the small quantity of copper added.

After considering this from all points of view it was decided not to adopt it for the following reasons:—

1. Probably both sulphate and carbonate of copper would be formed, thus complicating matters.
2. Additional work would be involved in the separate determination of the amount of copper in solution in the water.

Copper Sulphate—After considering all aspects of the question the Sub-Committee concluded that copper sulphate seemed to be the best method of dealing with the difficulty. Past investigations indicate that one part of the crystalline salt per million of the water is sufficient to prevent growth, and working on this basis the Sub-Committee have inserted a new paragraph in the "Instructions for Analysis." It was therefore prescribed in the revised "Instructions" that a measured quantity of a standard solution of copper sulphate be added to each of the collecting bottles so as to ensure the presence of this salt to the extent of not less than one part per million. A small correction is necessary on account of the added salt, but this involves nothing more than a simple subtraction from the figures for the total dissolved solids and the sulphate.

The use of copper sulphate has proved entirely satisfactory both by general and microscopic observation. In one case a parallel experiment was made on two samples of the same water, one sample of water having added to it copper sulphate to the extent of one part per million. Whereas the untreated sample showed copious algal growth after two weeks' exposure, the treated sample remained unaltered.

Filtration.—In addition to the avoidance of errors the prevention of algal growth was desirable on the score of easy filtration. However, even in the absence of algæ, &c., it is a tedious process to pass the whole volume of collected water through the filter. Mr. J. F. Liverseege in a letter to the Committee suggested decantation after thorough settling. Some experiments have recently been made in London, and it appears that decantation is quite permissible. The amount of suspended matter remaining in the water collected in the London gauges after standing for four days was found to be quite unweighable; in fact, slightly

negative results were found on filtering the clear supernatant liquor. Decantation is therefore prescribed in the revised "Instructions."

Drying Temperature for Dissolved and Undissolved Matter.—The original instructions prescribed 105° C. for this. In view of the greater convenience of 100° C., it was considered advisable to ascertain if any error would be involved in the change. The following observations on London rainfall show the relation between these two temperatures:—

Weight of undissolved matter after drying at 100° C.	1951	milligrammes.
Weight after further drying at 105° C.	1935·5	,,
Extra loss due to further drying at 105° C.	15·5	= 0·8 per cent. of undissolved matter.
Weight of dissolved matter after drying at 100° C.	1967	milligrammes.
After further drying at 105° C.	1967	,,
Loss	Nil.	

In view of these facts there seemed no need for insistence on 105° C., and therefore 100° C. is prescribed in the revised "Instructions."

Chlorine.—In view of the greatly diluted character of this constituent it was thought that the usual process of titration might involve errors owing to the solubility of the silver chromate. Direct comparison with Volhard's method indicated that no serious error existed. It was therefore considered unnecessary to alter the method originally prescribed except to suggest that concentration should precede titration.

Ammonia.—It was suggested by Mr. Tankard that the ammonia might be more accurately determined by Nesslerising direct instead of after distillation, as was originally prescribed.

This point has been carefully investigated, and it has been found that under suitable conditions practically the same result is obtained by any one of the three methods referred to. The following are some actual observations on the same sample of water:—

By distillation and titration... ...	26·5	milligrammes NH_3
,, ,, Nesslerisation	25·7	,, ,,
,, direct Nesslerisation	26·4	,, ,,

For direct Nesslerisation it is, of course, necessary that the water should not be appreciably coloured.

In view of these results full discretion has been given to the analyst in the revised "Instructions."

Ash of Soluble Matter.—Section 8 of the revised "Instructions" provides for the addition of ammonium carbonate after ignition. This arose out of a suggestion by Mr. J. F. Liverseege. The ignition of the residue would tend to decompose any soluble carbonates in the original soluble matter.

The advisability or otherwise of the use of ammonium carbonate would therefore depend upon the chemical character of the residue. In a particular case this residue obtained from one of the London gauges was found to be made up as follows:—

Sodium sulphate	1·227	grammes.
Calcium ,, ...	0·329	,,
Calcium carbonate...	0·530	,,
Sodium chloride	0·178	,,

and clearly pointed to the advisability of using ammonium carbonate.

Tarry Matter.—In the original "Instructions" this was considered to be the loss of weight due to extraction with CS_2.

A question arose as to whether this could not be more accurately determined by the direct weighing of the matter extracted by CS_2, but investigation has shown that the extracted matter gains weight on drying, due probably to the oxidation of small quantities of free sulphur and sulphur compounds in the tar. The method of determination originally prescribed was therefore retained.

The following are the results of observations in London stations:—

Station.	Tar by "difference."	Tar by direct weighing.
Embankment Gardens ...	0·153 grammes	0·161 grammes
Finsbury Park	0·220 ,,	0·233 ,,

Other Points.—In revising the "Instructions" attention was directed to methods of sampling, quantities of the liquid to be used for various estimations, and to the return of sulphates in terms of SO_3 instead of SO_4.

While it is too much to hope that the "Revised Instructions for Analysis" are entirely free from objection, it is believed that they do not leave room for any serious errors.

"REVISED INSTRUCTIONS FOR ANALYSIS" OF RAIN WATER AND SOLIDS DEPOSITED IN THE STANDARD GAUGE, ISSUED JANUARY, 1916.

1. The bottles containing the collected rainfall should be properly labelled with name and number of station and the period of collection, and should be kept standing at the laboratory for several days until completely settled. The approximate volume of the liquid should be ascertained at the time of receipt.

UNDISSOLVED MATTER.

2. The whole of the amount collected should be used for estimating the suspended UNDISSOLVED MATTER.

Filtration.—3. If the bottle has been allowed to stand for a sufficient time to allow the liquid to become clear, there will be no necessity for the whole volume to be filtered. The clear portion can be carefully decanted off by means of a syphon tube inserted so as to reach to within one inch of the bottom of the bottle. The bottle should stand at a height above the vessel in which the decanted liquid is to be collected, sufficient for the easy and adjustable discharge of the flow.

The filtering medium which has given the best results consists of a layer of pulped filter paper suitably disposed in a Gooch crucible. The Gooch crucible should be fitted by means of an adapter to a filtering flask having a side tube for connexion to a vacuum pump.

The filter is prepared by weighing a 12·5 cm. filter paper or by tareing it against another paper of the same size and heating this with about 200 c.c. of the decanted liquid. By violently shaking this, a very finely divided pulp is produced and part of this is placed in the Gooch crucible and lightly pressed down by means of a glass rod with a flattened end. Gentle suction is then applied and the filter is ready for use. Should it get clogged up, the pulp, together with any solids collected upon it, may be removed and kept for further treatment, and a fresh filter made my placing some clean pulp upon the crucible.

Having decanted off the clear liquid to within one inch of the bottom of the bottle, the remaining turbid part must be shaken up and transferred to the filter, the bottle being washed out with some of the decanted liquid with the aid of a clean long-handled test-tube brush. Any paper pulp left over or previously removed is then put on the top of the matter collected in the crucible. Should there be more than one bottle of collected rainfall, each should be dealt with in the manner described, the whole of the pulp and the filtered matter being finally placed together in the Gooch crucible for subsequent treatment.

Undissolved Matter.—4. The Gooch crucible, after its contents have been washed with distilled water, is dried to constant weight; the difference between this weight and the weight of the empty crucible, plus filter paper, representing the TOTAL UNDISSOLVED MATTER. A temperature of 100° C. is sufficient for this.

Tarry Matter.—5. The crucible is then placed in an extraction apparatus and contents extracted with Carbon-bi-Sulphide. The difference found after drying at a 100° C. represents the TARRY MATTER.

Ash.—6. The residue from above is ignited for the determination of Ash. Care must be taken that any particles which might possibly drop through the holes in the crucible are not lost. The residue after ignition is the ASH of the UNDISSOLVED MATTER, and the loss is the COMBUSTIBLE MATTER insoluble in CS_2. (Allowance, of course, being made for the filter paper.)

DISSOLVED MATTER.

In the determination of DISSOLVED MATTER it will be necessary to reserve about eight litres of the decanted liquid. In the event of there being two or more station bottles, a proportional quantity should be taken from each bottle so that when the separate quantities are added together the mixture will represent a true average of the whole of the liquid collected.

Loss on Ignition and Ash.—7. One litre (or smaller quantity if there is a large proportion of dissolved solids present) of the decanted liquid is evaporated to dryness on a water bath and afterwards dried at 100° C. to constant weight. The residue is TOTAL DISSOLVED SOLIDS.

The residue is ignited at a dull red heat until all combustible matter has been consumed, then moistened with Ammonium Carbonate and again gently ignited.

Loss is "LOSS ON IGNITION" of matter dissolved in water.

Residue is "ASH" or inorganic matter dissolved in water.

Sulphate.—8. One litre of the decanted liquid should be acidified with Hydrochloric Acid, boiled, Barium Chloride added, filtered, and Barium Sulphate weighed. To be reported as SO_3.

Chloride.—9. 500 c.c., or suitable quantity, of the decanted liquid titrated with N/10 Silver Nitrate Solution. If the amount of Chloride present is small the liquid can be concentrated by evaporation before being titrated.

Ammonia.—10. One litre of the decanted liquid just acidified with dilute Sulphuric Acid and concentrated to 100 c.c. This, after making decidedly alkaline, to be distilled into N/10 acid and the Ammonia calculated.

(Alternative: If the liquid is not appreciably coloured, 10 c.c. to 25 c.c. may be directly "Nesslerised" with 1 c.c. of Nessler reagent.)

Lime.—11. One litre of the decanted liquid, to which solution of Ammonium Oxalate and a few drops of Ammonia have been added, to be concentrated to 100 c.c.; the Calcium Oxalate to be filtered, dried, gently ignited and weighed.

Alkalinity and Acidity.—12. One litre (or smaller quantity) of decanted liquid, if alkaline, to be titrated with N/10 or N/100 Hydrochloric Acid; if acid, with N/10 or N/100 Sodium Hydroxide, using Methyl Orange as indicator; acidity to be calculated as H_2SO_4 and alkalinity as NH_3.

PREVENTION OF GROWTH OF ORGANISMS, ALGÆ, ETC.

Before the bottles are placed in position under the gauges at the beginning of each month, 1 c.c. of an aqueous solution of $CuSO_4\ 5H_2O$ containing 15 grammes of the crystallised salt per litre should be added to each bottle.

The use of Copper Sulphate as an antiseptic involves a small correction in the determination of TOTAL DISSOLVED SOLIDS and SULPHATES. The following deductions should be made:—

(*a*) From the quantity of TOTAL DISSOLVED SOLIDS (par. 7), as determined from the above instructions, deduct 11 milligrammes for each bottle of rainfall collected.

(*b*) From the "loss on ignition in Dissolved Matter," as determined from the above instructions, deduct 1 milligramme for each bottle of rainfall collected.

(*c*) From the quantity of SO_3 (par. 8), as determined by the above instructions, deduct 5 milligrammes for each bottle of rainfall collected.

NOTES ON THE SELECTION OF CHEMICAL CHARACTERISTICS.

It should be pointed out that an examination, in approaching a complete analysis of the deposits of all gauges month by month, would be a task entirely beyond the Committee's resources. Such an analysis would involve the estimation of the elements contained in the deposits, together with their form of combination, and it would not be complete without a botanical and bacteriological study of the organisms present.

In order to devise a simple scheme of investigation, which can be uniformly carried out by any competent analyst, it is necessary to select a few characteristic items which appear likely to throw most light on the nature of the polluting matter, and which can be determined month by month in ordinary routine work for a large number of samples.

The following explanation of the items recorded, together with the reasons for their selection, may be useful for non-chemical readers of these reports.

Total Solids.—This heading comprises all the solid matter suspended either by itself or in combination with water in the atmosphere. A portion of it may be considered as a legitimate constituent of the atmosphere, as air, free from dust of one kind or another, can only be expected at extremely high altitudes. A portion of the total solids is soluble in water and is found by the evaporation of the deposited water or an aliquot portion of it. The remainder, being insoluble in water, appears mostly as a sediment in the collecting bottles after standing for some time. A small portion may remain suspended in the water, particularly after agitation.

Undissolved Matter.—The matter freely suspended in air and insoluble in the deposited water has, obviously, the first claim for examination. It consists largely of dust from the ground and carbonaceous smoke from the incomplete combustion of raw fuel. The composition of the dust varies in different districts according to the geological and surface features of the ground. It is different in town and country and depends upon the kind and state of roads and other open spaces. The portion due to mineral dust in the undissolved solids can be approximately gauged by their percentage of "ash" (this value also includes the "ash" contained in soot or smoke) obtainable upon ignition. However, before igniting the undissolved matter it is extracted with carbon bisulphide. The portion soluble in carbon bisulphide is largely composed of tarry matter, which is derived from the oily constituents of coal smoke.

It must be remembered that coal, on being burnt in a grate, is partly carbonised, yielding volatile products similar to those obtained from a gas retort. Unless the fuel-bed is so arranged that these products undergo complete combustion they will issue from the chimney along with the unconsumed sooty carbon. The tarry matter gives, therefore, an indication of the amount and character of the soot contained in the deposits. (The amount of fatty extract from vegetable or animal dust, which would be recorded under this heading, is probably negligible.)

The "loss on ignition" of the undissolved matter represents largely the carbonaceous matter, such as soot, emitted in the form of smoke. It would also represent any organic matter of vegetable or animal origin carried into the air in the form of dust. A further, but relatively small, portion consists of water of constitution from clayey matter, carbon dioxide from limestone, and the like.

Dissolved Matter.—The dissolved matter consists of that portion of the total solids which is readily soluble in water, such as chlorides, sulphates, and other salts. Free acids originally present in the atmosphere, such as sulphur dioxide or sulphuric acid, may react with the basic constituents of the undissolved matter and go into solution either in the course of, or after, deposition.

The only analytical treatment to which the dissolved solids are submitted is the estimation of the total mineral constituents contained in them by ignition. The "loss on ignition," being the difference between their original weight and the weight of "ash" obtained, represents partly combustible organic matter and partly water of constitution or volatile products of decomposition, such as carbon dioxide, ammonium salts, sulphuric or sulphurous acid, nitric acid, &c.

Apart from the above items, the sum of which represents the total solids, the separate estimation of a few constituents, already included in the total or in one of the items, is made, as they appear to throw some light upon the character of the various deposits.

Sulphates.—The sulphates present in the liquid portion are estimated and returned in terms of SO_3—i.e., sulphur trioxide or sulphuric anhydride—which represents the acid portion of all sulphates. The basic portion, such as ammonia, soda, lime, alumina, is not included in this figure. This item can be taken to represent the oxides of sulphur derived from the combustion of coal, oil, or gas containing sulphur of any kind.

Chlorides.—The chlorides are returned in terms of Cl, and do not, therefore, include the basic portion, which would probably consist of alkali or magnesia. It is probable that the greater portion of the chlorides is due to wind-borne sea-water spray.

Ammonia.—This is returned as free ammonia (NH_3), although it is probably present in most cases in the form of salts, such as sulphate or chloride. It may be derived from the carbonisation of coal in open fires and also from the decomposition or degradation of vegetable or animal nitrogenous matter.

Lime.—The estimation of lime and that of alkalinity or acidity of the deposits is optional, and was included in the analytical scheme with a view to its further extension.

It would be interesting to include tests for a great number of other items in these investigations; for instance, the estimation of the alkalies—iron, alumina—the identification and state of oxidation of the various acid and basic radicles, the separation of organic compounds, and the bacteriological examination of deposits, but, for the reasons stated above, the Committee think it desirable for the present to restrict the experimental work as far as possible, and to obtain the maximum results from the information thus gathered.

RESULTS OBTAINED IN THE YEAR FROM APRIL, 1915, TO MARCH, 1916.

CLASSIFICATION ADOPTED.

In the first Report of the Committee the numerical results for each element of deposit were classified under certain groups, A, B, C, and D, chosen for the purpose of permitting easy and effective comparison between the stations.

As in the present Report the same classification is adhered to, the preliminary explanatory matter showing the basis of the above classification is here again repeated for convenience of reference:—

Class A includes the stations which have less than 1 unit of deposit per square kilometre.

Class B, the stations which have between 1 and 3 units of deposit per square kilometre.

Class C, the stations which have between 3 and 5 units of deposit per square kilometre.

Class D, the stations which have 5 or more units of deposit per square kilometre.

The unit has been adjusted to suit each separate element, but the proportional division has been kept the same throughout. Thus for "total solids" the unit is 5 tons and the law of classification is—

Class A, less than 5 tons per square kilometre per month.

Class B, from 5 to 15 tons per square kilometre per month.

Class C, from 15 to 25 tons per square kilometre per month.

Class D, from 25 or more tons per square kilometre per month.

It will be understood that the figure 5 belongs to Class B, not Class A, and so on.

The units and limits in the several cases are as follows:—

Insoluble Matter.

Unit.		Limits.			
—	Tons per K^2 per month.	A Less than	B	C	D Over
Tar	0·05	0·05	0·05 to 0·15	0·15 to 0·25	0·25
Carbonaceous other than tar	1	1	1 to 3	3 to 5	5
Ash	2	2	2 to 6	6 to 10	10

Soluble Matter.

Loss on ignition	0·75	0·75	0·75 to 2·25	2·25 to 3·75	3·75
Ash	1·5	1·5	1·5 to 4·5	4·5 to 7·5	7·5
Total solids	5	5	5 to 15	15 to 25	25
Sulphates ...	1	1	1 to 3	3 to 5	5
Chlorine ...	0·3	0·3	0·3 to 0·9	0·9 to 1·5	1·5
Ammonia ...	0·05	0·05	0·05 to 0·15	0·15 to 0·25	0·25

Note.—Although sulphates in 1914–15 were returned as SO_4 and in 1915–16 as SO_3, the unit for classification has not been altered; but for the purpose of comparing the two years the sulphates in 1914–15 were re-classified as SO_3.

TABLES INCLUDED IN REPORT.

Table I. shows the monthly deposit for two selected stations, Oldham and Malvern, chosen as showing respectively the greatest and least amount of total solids deposited.

Tables II. and III. show respectively a comparison of monthly means for all stations for the half-years April–September, 1914–15 and 1915–16, and October–March, 1914–15 and 1915–16.

Table IV. compares the monthly means for summer and winter months of the year 1915–16.

Tables V. and VI. give the classification of the elements of pollution under Groups A, B, C, and D for the same periods as Tables II. and III. and based upon the monthly means as given in Tables II. and III.

Tables VII. and VIII. give the totals of each group, A, B, C, and D, for each element of pollution for all stations taken. These tables are prepared from Tables V. and VI. and cover the same periods.

Table IX. shows the average deposit of each element of pollution for each month for a certain group of 23 stations which provided practically continuous observations over a whole year from October, 1914, to September, 1915. This also shows the amount of each deposit per 100 mm. of rainfall.

Table X. is similar to Table IX., but includes the eight London stations only and is for the year from April, 1915, to March, 1916.

Owing to the war and the consequent need for economy, the Committee considered it advisable to omit from this Report most of the tables giving the actual monthly deposit for the different stations. Two stations are, however, given in Table I., selected as having the greatest and least deposit, and it is hoped that the other tables given will prove adequate for the purpose of this Report. All monthly returns have been published already *in extenso* in THE LANCET from time to time, and the figures are thus available for any who desire to refer to them.

For the purpose of such reference it may here be stated that the monthly returns and dates of publication were as follows:—

Return for				
April, 1915.	Published in THE LANCET	of	Aug. 21st,	1915.
May, ,,	,,	,,	Oct. 9th,	,,
June, ,,	,,	,,	Nov. 6th,	,,
July, ,,	,,	,,	Jan. 29th,	1916.
Aug., ,,	,,	,,	Feb. 19th,	,,
Sept., ,,	,,	,,	Mch. 25th,	,,
Oct., ,,	,,	,,	Apl. 15th,	,,
Nov. and Dec., 1915, and Jan., 1916.	,,	,,	June 3rd,	,,
Feb. and Mch., 1916.	,,	,,	July 15th,	,,

It will be observed on referring to Tables II., III., and IV. that the number of months used to obtain the figure representing "monthly mean" deposit is given for each station. It must, however, here be pointed out that when this number falls far short of six for the half-year broad inferences cannot be drawn; taking, for example, an extreme case where only one month's record is available for the half-year it may be that this month is not fairly representative of the period considered.

DISCUSSION OF RESULTS.

We may examine the results from several points of view, and it may be well to summarise here the aspects towards which we shall direct our attention. These are—

(1) Comparing the year 1915–16 with 1914–15 is there any indication of an improved state of the atmosphere or the reverse?

(2) What are the stations showing the greatest and least amount of deposit?

(3) How is the amount of impurity deposited affected by the seasons?

(4) Is there any indication of a relation existing between e.g. rainfall and total deposit or between the different elements of pollution?

To assist in making a more general use of the tables of deposit the following list of equivalents may prove of value.

One metric ton per square kilometre is approximately equivalent to—

9 lbs. per acre.
2·56 English tons per square mile.
One gramme per square metre.
1.1000 millimetre depth of rainfall.

Tables II. and III.—As these tables are for comparison of the first two years of records they include only such stations as were operating in both 1914–15 and 1915–16.

It will be found, therefore, that a greater number of stations are included in Table IV., which refers only to stations at work in 1915–16.

Considering first the six summer months, April to September inclusive, and comparing the two years on the basis of total solids deposited, the stations fall into three groups: (1) Those in which the total deposit in 1915–16 was greater than in 1914–15; (2) those in which it was less; and (3) the stations which showed no alteration. These groups are given below, and for this purpose stations which do not show a greater alteration in total solids than 0·3 metric ton per square kilometre have been placed in Group (3).

Total Solids Deposited in the Summer Months of 1915–16 Compared with 1914–15.

Deposit.		
Increased in 1915–16.	Diminished.	Unchanged.
Liverpool.	Birmingham, Central.	Kingston-upon-Hull.
London:—	Bolton.	London, Victoria Park.
Meteorological Office.	Malvern.	Finsbury Park.
Embankment Gardens.	Sheffield, Attercliffe.	Newcastle-on-Tyne.
Ravenscourt Park.	York.	Exeter.
Southwark Park.		
Wandsworth Common.		
Golden Lane.		
Manchester:—		
Cheadle.		
Davyhulme.		
Fallowfield.		
School of Technology.		
Whitefield.		
Oldham.		
Sheffield:—		
Hillsborough Park.		
Meersbrook Park.		
Weston Park.		
Greenock.		
Leith.		

It is very noticeable here that in the great majority of stations there has been a heavier deposit in the summer of 1915–16 than in 1914–15. This is too uniformly true to be a coincidence, and suggests a common cause.

A similar method has been applied to the six winter months and the two years compared on the basis of total solids deposited, with the results given below:—

Total Solids Deposited in the Winter Months of 1915–16 Compared with 1914–15.

Deposit.		
Increased in 1915–16.	Diminished.	Unchanged.
Birmingham, Aston.	Bolton.	Liverpool.
Birmingham, S.W.	Exeter.	London, Golden-lane.
London:—	Kingston-upon-Hull	Malvern.
Meteorological Office.	Wandsworth Common.	Manchester, Bowdon.
Embankment Gardens.	Manchester:—	
Finsbury Park.	Davyhulme.	
Ravenscourt Park.	Moss Side.	
Southwark Park.	Queen's Park.	
Victoria Park.	Oldham.	
Manchester:—	York.	
Ancoats.	Glasgow:—	
Philip's Park.	Alexandra Park.	
School of Technology.	Blythswood-square.	
Whitefield.	Ruchill Park.	
Newcastle-on-Tyne.	Tollcross Park.	
Coatbridge.	Victoria Park.	
Glasgow:—		
Bellahouston Park.		
Botanic Gardens.		
Richmond Park.		
Southside Park.		
Greenock.		
Leith.		

In this case there is again a preponderance of stations in which the deposit has increased, but it is not so marked as for the summer months.

If we take the mean monthly deposit in London —i.e., the average of all London stations—this was, for the summer of 1914–15, 10·91 metric tons per square kilometre and for the winter 11·41, whereas for the corresponding periods of 1915–16 it was 13·41 and 15·97 respectively, showing a marked increase in both seasons. The mean monthly deposit for the whole year in London was in 1914–15 11·16 tons per square kilometre and in 1915–16 14·69, an increase of over 30 per cent.

It is to be noted, however, that for the summer comparison in this case there was only one month available in 1914–15 for five out of seven of the London stations.

In Tables II. and III. the summer and winter deposits for each station are compared for the years 1914–15 and 1915–16, and we have seen that the latter year shows a majority of stations with increased deposit. In Tables VII. and VIII. we go a step farther by taking each element of pollution and finding the total of stations giving deposits grouping under Class A, B, C, or D. This is derived from Tables V. and VI., and like these is based on the mean monthly deposits for summer or winter. In the following table we have again reduced Tables VII. and VIII. to a comparison of the number of A's and B's added together and the C's and D's.

Comparison of 1914–15 with 1915–16.

—			April to Sept. (12 stations).		Oct. to March (38 stations).	
			A & B.	C & D.	A & B.	C & D.
Total solids ...	1914–1915	Soluble. Insoluble.	9	3	20	18
	1915–1916		10	2	16	22
Tar	1914–1915		10	2	34	4
	1915–1916		9	3	21	17
Carbonaceous ...	1914–1915		8	4	25	13
	1915–1916		8	4	30	8
Ash...	1914–1915		8	4	28	10
	1915–1916		8	4	27	11
Loss on ignition ...	1914–1915		11	1	25	13
	1915–1916		10	2	14	24
Ash...	1914–1915		10	2	13	25
	1915–1916		11	1	10	28
Sulphates	1914–1915		12	0	24	14
	1915–1916		12	0	26	12
Chlorine	1914–1915		12	0	26	12
	1915–1916		11	1	22	16
Ammonia	1914–1915		9	3	26	12
	1915–1916		10	2	25	13

We have therefore now obtained a means of direct comparison between the quantities deposited in the years under consideration.

A greater number under A + B in any period indicates a smaller deposit, a greater number under C + D a greater deposit, and we need only examine, say, the C + D column, since the A + B column is simply the complement of the C + D.

Considering now the C + D column and comparing the summer of 1914–15 with that of 1915–16, we note that tar, soluble loss on ignition, and chlorine showed a slightly greater deposit in 1915–16 than in 1914–15. Insoluble carbonaceous matter other than tar, insoluble ash, and sulphates show no alteration, while total solids, soluble ash, and ammonia were in greater quantity in the year 1914–15.

It should, however, be mentioned that the number of stations available for the summer comparison was only 12, hence too much weight must not be put on the above conclusions.

Looking at the columns comparing the winter months for the two years, we have a more reliable set of figures, as these are obtained from 38 stations. We find here clear evidence of increase in the amount of atmospheric pollution; total solids, tar, insoluble ash, soluble loss on ignition and ash, chlorine, and ammonia have all increased in quantity in 1915–16. The only evidence of reduced deposits in 1915–16 is in the case of insoluble carbonaceous matter other than tar and sulphates.

In the following table the stations giving the highest recorded mean monthly deposit as well as the lowest during the whole year April, 1915, to March, 1916, have been selected:—

Mean Monthly Deposit, 1915–16, in tons per square kilometre.

—	Highest.		Lowest.	
Total solids...	Oldham	29·35	Malvern	1·81
	Manchester—Ancoats Hosp.	23·94	Birmingham, S.W....	6·62
Tar	Glasgow—Bellahouston Park	0·41	Malvern	0·003
	London—Embankment Gardens ...	0·33	Manchester—Bowdon	0·01
Carbonaceous other than tar	Oldham	5·28	Malvern	0·17
	London—Embankment Gardens ...	4·64	Manchester—Bowdon	0·46
Insoluble ash	Oldham	16·48	Malvern	0·27
	Manchester—Ancoats Hosp.	11·09	Manchester—Bowdon	1·69
Loss on ignition of soluble matter	Glasgow—Alexandra Park	4·89	Malvern	0·49
	Victoria Park	3·68	B'ham., S.W.	0·63
Soluble ash	London—Embankment Gardens ...	7·20	Malvern	0·88
	Manchester—Bowdon	6·56	York	2·26
Sulphates (SO_3)... ...	Glasgow—Alexandra Park	3·52	Malvern	0·40
	Blythswood Square	3·45	York	1·19
			B'ham., S.W....	1·20
Chlorine ...	Manchester—Moss Side ...	1·54	Birmingham, S.W....	0·18
	Sheffield—Attercliffe ...	1·38	Malvern	0·19
Ammonia ...	Glasgow—Victoria Park	0·24	Malvern	0·02
	Alexandra Park	0·21	Exeter	0·03
	London—Golden Lane...	0·21	Manchester—Queen's Park	0·03

It will be seen from this table that there is a great variation in the amount of deposited matter, the maximum being ten or more times the minimum. It must, however, be borne in mind that Malvern station, which has the minimum deposit in every case except one, is a country station, situated at Malvern Wells, whereas the maximum deposits were invariably in cities. Although it does not appear on this table, it is curious to note that the nine Glasgow stations provide examples, in the case of nearly all constituents, of deposits approaching the maximum and also the minimum. This will be seen on examining Table IV., which gives mean monthly deposits for the summer and winter months separately.

SEASONAL VARIATIONS.

In order to examine the seasonal incidence of the various elements of deposit the following methods have been used. In Table IV., as mentioned above, the six summer months are compared with the six winter months on the basis of mean monthly deposit. This table throws into relief the broad distinction between summer and winter deposits.

TABLE I.—*Monthly Deposit at the Two Selected Stations, Oldham and Malvern.*

—	Station.	Rainfall in millimetres.	Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
			Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
1915.											
April	Oldham.	43	0·26	4·70	17·01	2·89	6·47	31·33	3·05	0·85	0·11
	Malvern.	17	0·01	0·12	0·14	0·27	0·53	1·07	0·21	0·11	0·01
May	Oldham.	48	0·43	7·03	36·21	1·36	4·07	49·10	2·16	0·62	0·14
	Malvern.	77	—	0·12	0·37	0·31	0·56	1·36	0·26	0·11	0·02
June	Oldham.	70	0·29	6·15	20·80	1·69	5·63	34·60	2·12	0·65	0·17
	Malvern.	36	—	0·30	0·47	0·41	0·69	1·87	0·34	0·10	0·01
July	Oldham.	120	0·18	4·41	9·75	2·87	7·66	24·90	3·17	0·81	0·16
	Malvern.	83	—	0·33	0·37	0·79	0·96	2·47	0·47	0·35	0·04
August* ...	Oldham.	119	0·14	2·69	3·95	0·95	6·21	13·94	2·13	0·68	0·12
September	Oldham.	17	0·10	3·98	11·37	0·90	2·36	18·71	1·10	0·35	0·08
October† ...	Oldham.	42	0·22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23
1916.											
January ...	Malvern.	26	—	0·05	0·10	0·41	1·67	2·23	0·61	0·28	—
February ...	Malvern.	85	—	0·08	0·20	0·52	0·82	1·62	0·41	0·25	—
March ...	Malvern.	44	0·01	0·12	0·23	0·72	0·95	2·03	0·53	0·14	0·04

* Malvern sent no returns from August to December, 1915, inclusive.
† Oldham discontinued observations after October.

To ascertain, however, if there was any regular change from month to month or any obvious relation between the different elements of the deposit, it is clear that one station alone would be unlikely to provide the necessary indication of such relation, should there be any.

It was therefore decided to compare the deposit for each month on the basis of an average for all stations for each particular month. There was, however, the difficulty that the group of stations observing altered during the year owing to new stations commencing, or existing ones suspending, work, and if not allowed for this would obscure the true seasonal relation, should there be one.

It was found that to select only those stations which were in operation from April, 1915, to March, 1916, would leave a very small group, owing to the reduction of stations occurring about the autumn of 1915 owing to the war. If, however, the year from October, 1914, to September, 1915, were taken, it provided a group of about 22 stations operating through the whole period, and as this period therefore promised more useful information as to seasonal incidence and relation between the various elements of pollution it was chosen for the purpose.

This variation in the number of observing stations is one of the difficulties which the Committee has had to cope with. The Committee believes that if the authorities which are coöperating realised this fact they would make a greater effort to maintain their observing stations, at least until the completion of current years on March 31st.

It will be convenient now to consider each of the constituents, or elements, of pollution separately, and for this purpose reference must be made to Table IX. and the graphs in Fig. I.

From this table the following list has been prepared showing the months of highest and lowest deposit for each element of pollution, together with the rainfall for comparison. It must be kept in mind that Table IX. and the graphs in Fig. I. are prepared from the averages of the monthly deposits of all stations included, the number being given in the table, so that, except so far as weather variations between the different stations may obscure the result, a fair idea is given of the seasonal incidence of the different elements of pollution and their relation to each other.

Table showing the Months of Highest and Lowest Deposit for each Element of Pollution, October, 1914, to September, 1915. Prepared from Average of 23 Stations.

—		Highest	Second highest.	Lowest.	Second lowest.
Rainfall		Dec.	July	March April June	—
Tar	Insoluble	,,	,,	Sept.	Aug.
Carbonaceous		July	Dec.	,,	April
Ash		June	,,	Aug.	Nov.
Loss on ignition	Soluble	Dec.	Jan.	June	March
Ash		,,	Feb.	,,	April
Total solids		,,	May	Aug.	Sept.
SO_3		,,	Jan.	June	April
Cl		,,	Feb.	,,	Sept.
NH_3		Jan.	Nov.	March	,,

It will be seen from this that loss on ignition and ash of the soluble matter, as well as sulphates, make their highest deposit in December, their second highest in January or February, and their lowest in March, April, or June, thus corresponding closely with the months of greatest and least rainfall. It is clear, therefore, that there is some relation between the deposit of soluble matter and rainfall; this will be even more apparent on examining the curves and will be referred to later.

Tar and total solids have their greatest deposit in December, and least in September and August.

The other remaining constituents do not lend themselves to any grouping, but it may be noted that, there is a general tendency for maximum deposits to occur in the winter months and minimum deposits in summer. The most notable instance of a maximum deposit in the summer months is that of insoluble ash, and this is more remarkable than the mere examination of the above list would indicate. Referring to the graph, Fig. I., it will be seen how evident is the increase of this deposit in the fine weather. Doubtless the favourable conditions for the production of dust from roads and other sources accounted for this.

In last year's Report it was stated that ammonia showed itself as a summer product; this conclusion does not hold good for the period at present under consideration, as it appears that the greatest deposits occurred in January and November, the lowest in March and September. Whether the conditions have altered in any way owing to the restrictions on the use of raw coal as a fuel, which are coming more and more into force, it is not possible to say at present; but it is of interest to remember that we are now really comparing the winter of 1914 with the summer of 1915, for the reasons already indicated. It may be that when fuel consumption has attained a "steady state" the summer preponderance of ammonia will again appear. Or again a comparison of, e.g., the summer of 1915 with the winter of 1916 may give an indication of the cause, since if the diminishing use of raw coal is having an effect it should be brought out by such comparison, as in that case it would tend to increase the summer preponderance of ammonia over the *following* winter. It is necessary in this connexion to keep in mind the point already referred to in describing Mr. Tanhard's experiments under "Analyses," which deals with the variation in the amount of ammonia present arising from the growth of organisms in the water collected.

TABLE II.—*Comparison of Monthly Means for all Stations for the Six Months, April to September, 1914 and 1915.*

—		April to September.	Rainfall in millimetres.	Metric tons per square kilometre.									No. of months used for average.
				Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.			
				Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).	
Birmingham Central ...	1914	53	0·16	3·87	11·18	1·45	4·85	21·51	1·96	0·81	0·45	5
	1915	79	0·23	2·08	6·29	0·80	2·30	11·70	1·00	0·40	0·06	1
Bolton	1914	117	0·12	2·37	6·15	5·00	6·47	20·05	3·07	1·19	0·07	3
	1915	84	0·06	2·55	4·56	2·91	6·13	16·22	3·13	0·96	0·06	5
Exeter	1914	53	0·05	1·78	3·33	0·96	1·71	7·82	0·59	0·25	0·01	6
	1915	46	0·02	1·30	3·07	1·01	2·23	7·63	0·95	0·22	0·02	6
Kingston-upon-Hull ...	1914	42	0·10	3·38	4·13	1·49	3·19	12·29	1·39	0·40	0·03	6
	1915	46	0·11	3·13	3·83	2·18	3·31	12·56	1·65	0·35	0·04	6
Liverpool	1914	60	0·63	2·59	8·19	3·19	4·23	18·83	2·33	0·75	0·21	6
	1915	63	0·19	4·22	8·91	1·93	4·36	19·62	2·39	0·59	0·15	6
London:—												
Meteorological Offices	1914	60	0·05	1·71	3·56	1·71	2·39	9·43	1·22	0·61	0·09	6
	1915	62	0·09	0·72	2·84	2·82	3·70	10·08	1·65	0·72	0·08	6
Embankment Gardens	1914	26	0·38	5·51	7·04	0·95	4·70	18·58	1·11	0·50	0·03	5
	1915	55	0·41	5·04	8·38	2·79	6·89	23·50	2·74	1·21	0·13	6
Finsbury Park	1914	30	0·11	2·87	6·15	1·80	3·60	14·53	1·81	0·40	0·07	1
	1915	48	0·13	1·85	6·16	0·84	2·60	11·59	1·20	0·34	0·03	6
Ravenscourt Park ...	1914	22	0·01	0·55	1·47	0·26	1·10	3·39	0·36	0·30	0·03	1
	1915	52	0·07	1·42	4·51	1·05	2·95	9·99	1·46	0·30	0·09	6
Southwark Park	1914	19	0·05	3·27	6·73	0·32	3·26	13·63	1·35	0·37	0·05	1
	1915	56	0·12	2·56	6·85	1·93	5·24	16·71	2·93	0·53	0·11	6
Wandsworth Common	1914	10	0·02	0·54	1·31	1·25	2·76	5·88	1·25	0·41	0·01	1
	1915	39	0·05	0·90	3·48	0·72	4·69	9·83	—*	—*	—*	6
Victoria Park...	1914	30	0·05	0·99	2·29	2·49	6·61	12·44	3·00	0·73	0·04	1
	1915	50	0·07	1·51	4·62	1·94	4·18	12·32	2·17	0·50	0·10	6
Golden Lane	1914	31	0·04	2·17	3·52	1·20	2·51	9·42	1·33	0·45	0·11	6
	1915	64	0·06	3·06	4·70	1·74	3·65	13·22	2·05	0·64	0·18	6
Malvern	1914	46	0·01	0·24	0·40	0·57	0·97	2·22	0·40	0·19	0·03	6
	1915	53	—	0·22	0·34	0·44	0·68	1·69	0·32	0·17	0·02	4
Manchester:—												
Cheadle	1914	72	0·10	2·04	2·00	1·50	3·18	8·76	1·47	0·74	0·06	2
	1915	60	0·14	1·99	3·37	1·33	2·32	9·16	1·39	0·72	0·09	5
Davyhulme	1914	64	0·03	0·99	2·00	1·15	2·78	6·94	1·57	0·62	0·08	2
	1915	54	0·02	0·99	3·37	1·26	4·03	9·67	2·32	0·46	0·08	6
Fallowfield	1914	78	0·04	1·05	2·06	0·86	2·54	6·53	1·45	0·52	0·05	2
	1915	54	0·04	1·16	3·30	1·08	4·04	9·62	1·99	0·35	0·04	6
School of Technology...	1914	86	0·11	3·68	7·26	1·90	5·47	18·43	2·66	1·25	0·10	3
	1915	60	0·16	3·04	9·71*	1·50	4·85	19·26	2·39	0·63	0·08	6
Whitefield	1914	89	0·04	1·44	3·29	1·35	4·73	10·85	2·20	0·77	0·06	2
	1915	60	0·03	1·74	4·46	1·65	4·16	12·04	2·53	0·48	0·06	5
Newcastle-upon-Tyne ...	1914	48	0·14	3·55	6·57	1·12	2·26	13·64	1·22	0·28	0·10	6
	1915	24	0·13	2·75	6·87	1·08	2·79	13·63	1·38	0·28	0·09	6
Oldham...	1914	67	0·22	4·16	10·58	1·70	4·33	20·57	1·12	0·64	0·13	2
	1915	69	0·23	4·83	16·51	1·78	5·40	28·76	2·29	0·66	0·13	6
Sheffield—												
Attercliffe	1914	41	0·51	3·37	10·90	1·52	5·82	22·12	2·32	1·16	0·06	3
	1915	28	0·11	3·16	7·27	2·00	3·55	16·10	1·25	1·38	0·04	5
Hillsborough Park ...	1914	42	0·31	0·43	2·64	0·72	2·81	6·91	1·05	0·80	0·05	3
	1915	35	0·06	1·45	4·93	0·86	4·13	11·43	1·70	0·60	0·04	5
Meersbrook Park	1914	49	0·32	0·10	2·15	0·93	2·54	6·72	1·05	0·67	0·05	3
	1915	35	0·07	1·39	4·43	0·71	3·68	10·28	1·75	0·56	0·04	5
Weston Park	1914	44	0·48	0·73	3·60	1·21	3·05	9·06	1·14	0·67	0·06	3
	1915	35	0·05	1·51	4·81	1·13	3·35	10·85	1·65	0·66	0·04	5
York	1914	47	0·08	1·56	3·07	0·98	2·12	7·83	0·84	0·38	0·30	6
	1915	26	0·06	1·05	2·78	0·81	1·38	6·09	0·64	0·23	0·06	6
Greenock	1914	65	0·04	1·74	3·64	1·37	2·13	8·92	0·88	0·30	0·06	6
	1915	54	0·05	2·66	5·00	1·60	2·85	12·17	1·38	0·41	0·12	6
Leith	1914	34	0·06	1·19	2·73	0·95	1·31	6·25	0·69	0·18	0·07	6
	1915	56	0·05	1·26	3·34	2·08	2·63	9·36	1·13	0·23	0·11	6

* Results unreliable.

TABLE III.—*Comparison of Monthly Means for all Stations for the Six Months, October to March, 1914–15 and 1915–16.*

—	—	Rainfall in millimetres.	Metric tons per square kilometre.									No. of months used for average.
			Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.			
			Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).	
irmingham, Aston ...	1914–15	73	0·07	1·93	4·73	1·14	4·19	12·07	1·92	0·46	0·04	6
	1915–16	44	0·08	2·51	6·71	1·04	4·22	14·56	2·04	0·30	0·07	1
irmingham, S.W.	1914–15	84	0·04	0·77	1·99	0·63	2·60	6·04	0·97	0·42	0·02	6
	1915–16	49	0·04	1·00	3·06	0·83	3·56	8·49	1·70	0·24	0·04	1
olton	1914–15	121	0·11	1·99	6·41	4·49	9·64	22·63	4·62	2·02	0·10	6
	1915–16	89	0·08	2·78	6·31	2·52	6·06	17·74	2·73	1·71	0·08	2
xeter	1914–15	88	0·04	1·54	2·86	1·72	3·79	9·94	1·43	0·86	0·03	6
	1915–16	103	0·02	1·43	2·12	1·57	3·60	8·74	1·67	0·77	0·03	6
ingston-upon-Hull ...	1914–15	64	0·07	2·53	4·57	2·61	5·06	14·84	2·45	0·73	0·06	6
	1915–16	55	0·14	2·66	3·62	3·00	4·83	14·25	2·34	0·79	0·04	4
eicester	1914–15*	—	—	—	—	—	—	—	—	—	—	—
	1915–16	82	0·22	3·89	4·96	3·52	4·72	17·31	2·31	0·58	0·16	5
verpool	1914–15	75	0·29	2·29	8·34	3·15	4·52	18·60	2·76	0·99	0·57	6
	1915–16	81	0·23	2·88	6·39	3·49	5·68	18·67	2·82	1·17	0·22	3
ondon :—												
Meteorological Office ...	1914–15	64	0·14	0·85	4·38	3·91	4·98	14·26	2·20	0·92	0·06	6
	1915–16	69	0·13	2·43	4·97	2·70	6·75	16·99	2·46	1·06	0·09	6
Embankment Gardens	1914–15	66	0·23	3·39	7·31	1·84	7·43	20·21	2·90	1·30	0·07	6
	1915–16	63	0·35	4·05	7·53	2·58	7·67	22·17	3·58	1·22	0·09	4
Finsbury Park	1914–15	65	0·21	1·75	4·26	1·45	4·70	12·34	1·80	0·47	0·05	6
	1915–16	71	0·20	1·88	5·93	1·36	4·64	14·01	2·01	0·56	0·05	6
Ravenscourt Park ...	1914–15	64	0·05	1·06	2·85	0·99	4·32	9·28	1·70	0·44	0·06	6
	1915–16	71	0·10	2·04	4·57	1·68	5·47	13·86	2·78	0·45	0·09	5
Southwark Park	1914–15	75	0·09	3·27	6·27	1·58	6·60	17·81	2·81	0·70	0·09	6
	1915–16	69	0·16	3·64	7·32	2·65	7·08	20·85	2·98	0·76	0·10	6
Vandsworth Common	1914–15	56	0·03	0·88	2·51	1·41	5·16	9·99	2·44	0·53	0·04	6
	1915–16	59	0·07	1·05	3·01	0·91	3·37	8·40	1·57	0·57	0·03	5
Victoria Park	1914–15	66	0·05	1·27	2·74	1·66	5·34	11·07	2·52	0·54	0·05	6
	1915–16	57	0·05	1·11	4·45	2·42	7·05	15·07	3·52	0·61	0·06	6
Wolden Lane	1914–15	73	0·08	3·20	5·06	2·58	5·46	16·28	3·02	0·88	0·14	6
	1915–16	74	0·08	3·39	4·85	3·17	4·89	16·37	3·03	0·88	0·24	6
lvern	1914–15	53	0·00	0·13	0·25	0·63	1·03	2·05	0·44	0·29	0·01	6
	1915–16	52	0·00	0·08	0·18	0·55	1·15	1·96	0·52	0·22	0·01	3
nchester :—												
ncoats	1914–15	78	0·11	4·47	11·57	1·95	8·69	26·79	4·19	1·13	0·08	3
	1915–16	27	0·11	5·60	11·91	2·48	8·64	28·74	4·03	1·13	0·10	1
owdon	1914–15	69	0·01	0·49	1·78	0·66	2·74	5·69	1·22	0·55	0·05	3
	1915–16	34	0·01	0·48	2·14	0·67	2·44	5·74	1·14	0·43	0·05	1
avyhulme	1914–15	70	0·02	1·05	4·08	0·96	5·11	11·23	2·41	0·76	0·09	5
	1915–16	38	0·03	0·98	4·13	1·79	3·64	10·57	1·34	0·83	0·11	1
oss Side	1914–15	75	0·14	2·01	5·86	1·44	6·15	15·60	2·77	1·04	0·09	3
	1915–16	38	0·12	1·90	6·25	1·44	5·42	15·13	2·61	1·08	0·08	1
hilip's Park	1914–15	71	0·11	3·06	7·74	2·12	7·33	20·35	3·39	1·39	0·05	3
	1915–16	30	0·06	3·42	9·74	1·84	7·21	22·27	2·12	1·10	0·06	1
ueen's Park	1914–15	74	0·08	1·86	7·38	1·24	7·15	17·71	3·37	1·10	0·04	3
	1915–16	55	—	—	—	—	—	16·78	—	—	—	4
hool of Technology ...	1914–15	77	0·12	3·33	6·71	1·39	6·65	17·21	2·72	1·08	0·07	6
	1915–16	60	—	—	—	—	—	22·95	—	—	—	4
hitefield	1914–15	87	0·04	1·46	5·41	1·47	6·92	13·29	3·24	1·25	0·41	5
	1915–16	36	0·06	1·61	4·95	2·29	4·80	13·71	1·90	1·03	0·05	1
castle-on-Tyne	1914–15	63	0·13	3·99	6·25	2·20	4·92	17·46	2·32	0·68	0·20	6
	1915–16	69	0·28	4·46	7·73	2·39	5·16	20·03	2·53	0·78	0·17	6
am	1914–15	94	0·37	7·09	16·21	3·00	8·03	34·70	3·17	0·97	0·45	6
	1915–16	42	0·22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23	1
:	1914–15	62	0·11	1·56	3·46	1·59	3·42	10·25	1·67	0·69	0·45	6
	1915–16	49	0·15	1·38	2·49	2·60	3·14	9·76	1·75	0·64	0·09	6
bridge	1914–15	70	0·09	1·55	3·40	0·91	1·94	7·89	0·95	0·27	0·08	3
	1915–16	61	0·08	1·65	3·65	1·51	3·64	10·53	1·63	0·57	0·12	6
gow :—												
xandra Park	1914–15	54	0·05	3·76	4·00	6·05	9·65	23·51	5·97	0·54	0·26	3
	1915–16	77	0·26	1·89	2·27	6·09	8·10	18·62	3·70	1·05	0·20	5
lahouston Park ...	1914–15	49	—	0·91	1·86	2·43	2·22	7·42	1·21	0·33	0·15	3
	1915–16	89	0·21	1·09	1·88	4·60	5·76	13·55	3·34	1·04	0·09	5
thswood Square ...	1914–15	67	0·02	5·60	4·22	4·53	7·25	21·62	3·87	0·35	0·29	3
	1915–16	90	0·31	2·42	3·28	4·69	7·38	18·08	4·45	0·88	0·19	6
anic Gardens	1914–15	66	0·06	1·68	3·41	4·09	5·84	15·08	3·26	0·31	0·13	3
	1915–16	101	0·29	1·96	3·12	6·36	8·20	19·93	5·16	1·26	0·16	5
hmond Park	1914–15	69	0·03	1·53	3·30	5·36	4·36	14·59	3·21	0·28	0·12	3
	1915–16	94	0·32	1·60	3·03	5·57	6·87	17·38	4·73	0·89	0·25	5
hill Park	1914–15	71	0·06	3·73	3·90	1·84	5·95	15·48	3·16	0·39	0·11	3
	1915–16	99	0·23	1·41	2·38	4·60	6·52	15·15	2·94	0·81	0·15	5
th Side Park	1914–15	62	0·03	2·56	2·26	1·25	2·49	8·58	1·72	0·23	0·20	3
	1915–16	95	0·22	1·37	2·24	4·07	5·61	13·52	3·90	0·85	0·14	5
cross Park	1914–15	62	0·01	3·08	3·67	4·72	8·78	20·25	3·39	0·37	0·11	3
	1915–16	91	0·26	1·58	2·77	5·00	7·01	16·63	4·25	0·86	0·15	5
oria Park...	1914–15	71	0·04	3·65	2·31	6·05	5·61	17·66	3·93	0·37	0·37	3
	1915–16	95	0·41	1·24	1·96	5·48	6·89	15·99	4·03	0·94	0·30	5
ock	1914–15	137	0·07	2·27	4·06	2·18	4·39	12·17	2·05	0·91	0·18	5
	1915–16	99	0·14	2·30	3·95	2·25	4·78	13·44	2·12	1·19	0·19	6
... ...	1914–15	38	0·06	1·35	3·66	1·73	2·64	9·44	1·19	0·48	0·17	5
	1915–16	50	0·06	1·16	3·12	2·27	3·32	9·93	1·67	0·58	0·18	5

* Not working.

TABLE IV.—*Comparison of Monthly Means for all Stations for the Six Months April to September, 1917, and the Six Months October to March, 1915-16—i.e., Summer and Winter Months.*

—	—	Rainfall in millimetres.	Metric tons per square kilometre.									Number of months included in means.
			Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.			
			Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).	
Birmingham, Aston ...	Apl.-Sep.	57	0·10	1·77	6·61	0·90	3·52	12·90	1·63	0·24	0·03	5
	Oct.-Mch.	44	0·08	2·51	6·71	1·04	4·22	14·56	2·04	0·30	0·07	
Birmingham, S.W.... ...	Apl.-Sep.	52	0·04	1·01	2·48	0·60	2·42	6·54	1·11	0·17	0·04	6
	Oct.-Mch.	49	0·04	1·00	3·06	0·83	3·56	8·49	1·70	0·24	0·04	
Bolton	Apl.-Sep.	84	0·06	2·55	4·56	2·91	6·13	16·22	3·13	0·96	0·06	5
	Oct.-Mch.	89	0·08	2·78	6·31	2·52	6 06	17·74	2·73	1·71	0·08	
Exeter	Apl.-Sep.	46	0·02	1·30	3·07	1·01	2·23	7·63	0·95	0·22	0·02	6
	Oct.-Mch.	103	0·02	1·43	2·12	1·57	3·60	8·74	1·67	0·77	0·03	
Kingston-upon-Hull ...	Apl.-Sep.	46	0·11	3·13	3·83	2·18	3·31	12·56	1·65	0·35	0·04	4
	Oct.-Mch.	55	0·14	2·66	3·62	3·00	4·83	14·25	2·34	0·79	0·04	
Leicester	Apl.-Sep.	65	0·05	2·61	4·69	2·38	2 51	12·24	1·30	0·30	0·10	5
	Oct.-Mch.	82	0·22	3·89	4 96	3·52	4·72	17·31	2·31	0·58	0·16	
Liverpool	Apl.-Sep.	63	0·19	4·22	8·91	1·93	4·36	19·62	2·39	0·59	0·15	6
	Oct.-Mch.	81	0·23	2·88	6·39	3·49	5·68	18·67	2·82	1·17	0·22	
London:—												
Meteorological Office ...	Apl.-Sep.	62	0·09	0·72	2·84	2·82	3·70	10·08	1·65	0·72	0·08	
	Oct.-Mch.	69	0·13	2·43	4·97	2·70	6·75	16·99	2·46	1·06	0·09	
Embankment Gardens	Apl.-Sep.	55	0·41	5·04	8·38	2·79	6·89	23·50	2·74	1·21	0·13	
	Oct.-Mch.	63	0·35	4·05	7·53	2·58	7·67	22·17	3·58	1·22	0·09	
Finsbury Park	Apl.-Sep.	48	0·13	1·85	6·16	0·84	2·60	11·59	1·20	0·34	0·03	
	Oct.-Mch.	71	0·20	1·88	5·93	1·36	4·64	14·01	2·01	0·56	0·06	
Ravenscourt Park ...	Apl.-Sep.	52	0·07	1·42	4·51	1·05	2·95	9·99	1·46	0·30	0·09	
	Oct.-Mch.	71	0·10	2·04	4·57	1·68	5·47	13·86	2·78	0·45	0·09	
Southwark Park	Apl.-Sep.	56	0·12	2·56	6·85	1·93	5·24	16·71	2·98	0·53	0·11	
	Oct.-Mch.	69	0 16	3·64	7·32	2·65	7·08	20·85	2·98	0·76	0·10	
Wandsworth Common	Apl.-Sep.	39	0·05	0·90	3·48	0·72	4·69	9·83	—*	—*	—*	
	Oct.-Mch.	59	0·07	1·05	3·01	0 91	3·37	8·40	1·57	0·57	0·03	
Victoria Park...	Apl.-Sep.	50	0·07	1·51	4 62	1·94	4·18	12·32	2·17	0·50	0·10	
	Oct.-Mch.	57	0·05	1·11	4·45	2·42	7·05	15·07	3·52	0·61	0·06	
Golden Lane	Apl.-Sep.	64	0·06	3·06	4·70	1·74	3·65	13·22	2·05	0·64	0·18	
	Oct.-Mch.	74	0·08	3·39	4·85	3·17	4·89	16·37	3·03	0·88	0·24	
Malvern	Apl.-Sep.	53	0·00	0·22	0·34	0·44	0·68	1·69	0·32	0·17	0·02	
	Oct.-Mch.	52	0·00	0·08	0·18	0·55	1·15	1·96	0·52	0·22	0·01	
Manchester:—												
Ancoats	Apl.-Sep.	56	0·10	3·91	10·92	2·21	5·84	22·98	2·82	0·66	0·08	
	Oct.-Mch.	27	0·11	5·60	11·91	2·48	8·64	28·74	4·03	1·13	0·10	
Bowdon	Apl.-Sep.	60	0·01	0 46	1·62	0·99	7·25	10·33	1·34	0·28	0·04	
	Oct.-Mch.	34	0·01	0·48	2·14	0·67	2·44	5·74	1·14	0·43	0·05	
Davyhulme	Apl.-Sep.	54	0·02	0 99	3·37	1·26	4·03	9·67	2·32	0·46	0·08	
	Oct.-Mch.	38	0·03	0·98	4·13	1·79	3·64	10·57	1·34	0·83	0·11	
Moss Side...	Apl.-Sep.	63	0·11	1·25	4·23	1·33	4·68	11·60	2·37	0·62	0·06	
	Oct.-Mch.	38	0·12	1·90	6·25	1·44	5·42	15·13	2·61	1·08	0·08	
Philip's Park	Apl.-Sep.	64	0 07	3·02	7·14	2·07	5·70	18·00	2·37	0·80	0·05	
	Oct.-Mch.	30	0·06	3·42	9·74	1·84	7·21	22·27	2·12	1·10	0 06	
Queen's Park...	Apl.-Sep.	64	0·06	2·21	4·55	2·04	5·75	14·61	2·79	0·69	0·05	
	Oct.-Mch.	55	—	—	—	—	—	16·78	—	—	—	
School of Technology...	Apl.-Sep.	60	0·16	3·04	9·71	1·50	4·85	19·26	2·39	0·63	0·08	
	Oct.-Mch.	60	—	—	—	—	—	22·95	—	—	—	
Whitefield	Apl.-Sep.	60	0·03	1·74	4·46	1·65	4·16	12·04	2·53	0·48	0·05	
	Oct.-Mch.	36	0·06	1·61	4·95	2·29	4·80	13·71	1·90	1·03	0·05	
Newcastle-on-Tyne... ...	Apl.-Sep.	24	0·13	2·75	6·87	1·08	2·79	13·63	1·38	0·28	0·09	
	Oct.-Mch.	69	0·28	4·46	7·73	2·39	5·16	20·03	2·53	0·78	0·17	
Oldham...	Apl.-Sep.	69	0·23	4·83	16·51	1·78	5·40	28·76	2·29	0·66	0·13	
	Oct.-Mch.	42	0·22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23	
York	Apl.-Sep.	26	0·06	1·05	2·78	0·81	1·38	6·09	0·64	0·23	0·06	
	Oct.-Mch.	49	0·15	1·38	2·49	2·60	3·14	9·76	1·75	0·64	0·09	
Coatbridge	Apl.-Sep.	53	0·10	1·77	4·45	1·10	1·97	9·39	1·15	0·21	0·10	
	Oct.-Mch.	61	0·08	1·65	3·65	1·51	3·64	10·53	1·63	0·57	0·12	
Glasgow:—												
Alexandra Park	Apl.-Sep.	51	0·13	1·88	3·50	3·89	3·19	12·60	3·37	0·30	0·22	
	Oct.-Mch.	77	0·26	1·89	2·27	6·09	8·10	18·62	3·70	1·05	0 20	
Bellahouston Park ...	Apl.-Sep.	46	0·58	1·40	2·52	0·78	1·92	7·21	1·03	0·16	0·06	
	Oct.-Mch.	89	0·21	1·09	1·88	4·60	5·76	13·55	3·34	1·04	0·09	
Blythswood Square ...	Apl.-Sep.	52	0·13	1·64	3·73	2·01	4·34	11·85	2·46	0·21	0·18	
	Oct.-Mch.	90	0·31	2·42	3·28	4·69	7·38	18·08	4·45	0·88	0·19	
Botanic Gardens	Apl.-Sep.	49	0 41	1·89	2·83	1·13	2·51	8·77	1·39	0·14	0·06	
	Oct.-Mch.	101	0·29	1·96	3·12	6·36	8·20	19·93	5·16	1·26	0·16	
Richmond Park	Apl.-Sep.	51	0·12	1·61	3·39	1·79	3·01	9·94	1·56	0·15	0·14	
	Oct.-Mch.	94	0·32	1·60	3·03	5·57	6·87	17·38	4·73	0·89	0·25	
Ruchill Park	Apl.-Sep.	57	0·15	1·60	3·58	1·63	4·27	11·25	2·29	0·15	0·11	
	Oct.-Mch.	99	0·23	1·41	2·38	4·60	6·52	15·15	2·94	0·81	0·15	
South Side Park	Apl.-Sep.	52	0·10	1·05	2·46	1·15	2·15	6·93	1·34	0·13	0·08	
	Oct.-Mch.	95	0·22	1·37	2·24	4·07	5·61	13·52	3·90	0·85	0·14	
Tollcross Park	Apl.-Sep.	52	0·16	2·69	4·50	1·51	4·52	13·39	1·70	0·15	0·09	
	Oct.-Mch.	91	0·26	1·58	2·77	5·00	7·01	16·63	4·25	0·86	0·15	
Victoria Park	Apl.-Sep.	59	0·16	1·26	2·75	2·17	2·92	9·28	1·92	0·15	0·19	
	Oct.-Mch.	95	0·41	1·24	1·96	5·48	6·89	15·99	4·03	0·94	0·20	
Greenock	Apl.-Sep.	54	0·05	2·66	5·00	1·60	2·85	12·17	1·38	0·41	0·22	
	Oct.-Mch.	99	0·14	2·30	3·95	2·25	4·78	13·44	2·12	1·19	0·19	
Leith	Apl.-Sep.	56	0·05	1·26	3·34	2·08	2·63	9·36	1·13	0·23	0·11	
	Oct.-Mch.	50	0·06	1·16	3·12	2·27	3·32	9·93	1·67	0·58	0·18	

* Results unreliable.

TABLE V.—*Classification.*

April to September, 1915. Station.	No. of months	Rainfall in mm.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphuric acid.	Chlorine.	Ammonia
ıit for classification			0·05	1	2	0·75	1·5	5	1	0·3	0·05
rmingham, Central	1	79	C	B	C	B	B	B	B	B	B
,, Aston	5	57	B	B	C	B	B	B	B	A	A†
,, S.W.	6	52	A	B	B	A†	B	B	B	A	A
lton	5	84	B	B	B	C	C	C	C	C	B
eter	6	46	A	B	B	B	B	B	A	A	A*
ɔgston-upon-Hull	6	46	B	C	B	B	B	B	B	B	A
ıcester...	5	65	B	B	B	C	B	B	B	B	B
'erpool...	6	63	C	C	C	B	B	C	B	B	C
ndon :—											
leteorological Office	6	62	B	A	B	C	B	B	B	B	B
mbankment Gardens... ...	6	55	D†	D*	C	C	C	C	B	C	B
insbury Park...	6	48	B	B	C	B	B	B	B	B	A†
avenscourt Park	6	52	B	B	B	B	B	B	B	B	B
outhwark Park	6	56	B	B	C	B	C	C	B	B	B
'andsworth Common	6	39	B	A	B	A	C	B	Un.	Un.	Un.
ictoria Park	6	50	B	B	B	B	B	B	B	B	B
olden Lane	6	64	B	C	B	B	B	B	B	B	C
vern	4	53	A*	A*	A*	A*	A*	A*	A*	A	A*
ıchester :—											
ıcoats	5	56	B	C	D†	B	C	C	B	B	B
ɔwdon	6	60	A†	A†	A†	B	C	B	B	A	A
ɔeadle	5	60	B	B	B	B	B	B	B	B	B
ıvyhulme	6	54	A	A	B	B	B	B	B	B	B
illowfield	6	54	A	B	B	B	B	B	B	B	A
ɔss Side	6	63	B	B	B	B	C	B	B	B	B
ilip's Park	6	64	B	C	C	B	C	C	B	B	B
ıeen's Park	6	64	B	B	B	B	C	B	B	B	B
hool of Technology	6	60	C	C	C	B	C	C	B	B	B
hitefield	5	60	A	B	B	B	B	B	B	B	B
castle-on-Tyne	6	24	B	B	C	B	B	B	B	A	B
am	6	69	C	C	D*	B	C	D*	B	B	B
field :—											
ercliffe	3	28	B	C	C	B	B	C	B	C	A
llsborough Park...	3	35	B	B	B	B	B	B	B	B	A
ersbrook Park	3	35	B	B	B	A	B	B	B	B	A
ston Park	3	35	B	B	B	B	B	B	B	B	A
... ...	6	26	B	B	B	B	A†	B	A†	A	B
ɔridge	6	53	B	B	B	B	B	B	B	A	B
ow :—											
xandra Park	6	51	B	B	B	D*	B	B	C	B	C
lahouston Park...	6	46	D*	B	B	B	B	B	B	A	B
thswood Square	6	52	B	B	B	B	B	B	B	A	C
anic Gardens	6	49	D	B	B	B	B	B	B	A†	B
ɔmond Park	6	51	B	B	B	B	B	B	B	A	B
hill Park	6	57	C	B	B	B	B	B	B	A	B
th Side Park	6	52	B	B	B	B	B	B	B	A*	B
cross Park	6	52	C	B	B	B	C	B	B	A	B
ɔria Park	6	59	C	B	B	B	B	B	B	A	C
ock...	6	54	B	B	B	B	B	B	B	B	B
.. ..	6	56	B	B	B	B	B	B	B	A	B

Un., Unreliable.

* Indicates the letters representing the highest and lowest records for each element in the list of stations.
† Indicates the second (if there is one) in Class A or Class D.

monia.—* Exeter and Malvern equal. † Birmingham (Aston) and Finsbury Park equal.

Table IV. the summer and winter deposits are ıred, and if we eliminate from this any ns having less than 4 months' observations in summer or winter we find that a comparison amounts of deposit gives the following result:

Comparison of Summer and Winter Deposit for Year April, 1915, to March, 1916.

—	Winter deposit greatest in: Stations.	Deposits equal.	Summer deposit greatest in: Stations.
l	24	—	1
... ...)	19	1	5
ıceous - Insoluble	14	—	11
... ...)	7	—	18
ignition) Soluble	23	—	2
... ...)	24	—	1
lids...	23	—	2
es	23	1	0
ɔ	24	—	0
ia	18	2	4

It must be kept in mind that we are now comparing the *number of stations* at which the summer or the winter deposit of any particular element of deposit had the preponderance; this is not a comparison of *quantity* deposited and would only be such if all stations had the same amount of deposit.

We note at once that insoluble carbonaceous matter and ash again stand out, the latter as the only case in which the number of stations showing a greater deposit in summer than winter exceeded the number with greatest winter deposit, and the former approaching the same condition. In all other cases the number of stations with greatest winter deposit greatly exceed the number with greatest summer deposit.

It is to be carefully noted that no legitimate inference as to relation of rainfall and deposit can be drawn from these figures. Doubtless the summer preponderance of insoluble ash is due to dust.

RELATION OF DEPOSITS.

Considering first the relation of the deposit of suspended matter to rainfall, it is clear from examination of Table IX. and the graphs that there is a close relation between the deposit of soluble matter and rainfall, both rising or falling together. We must, however, keep in mind the short period available and the possibility that further observations may not bear out this conclusion. At the same time, the parallelism between the curves for rainfall, soluble loss on ignition, soluble ash, and SO_3 is too marked to pass over without notice.

On Table IX. are also given the deposits per 100 mm. of rainfall, and in the last column is given the degree of variation in the figures—i.e., the maximum divided by the minimum. This column may therefore be read as showing the variation in the figures for any deposit in the form 1 to 4·4 for rain, 1 to 1·95 for tar, and so on.

From the point of view of relation between rainfall and deposit we may look at the table in two ways. First we may examine the deposits per 100 mm. rainfall for the uniformity one would expect if the deposit was in any case a function of the rainfall. The column $\frac{\text{maximum}}{\text{minimum}}$ provides an easy way of examining the degree of departure from uniformity. We find thus that the greatest variation is in the insoluble ash—4·42, and the next greatest is insoluble carbonaceous—3·62. Chlorine shows a variation of 3·43, but this is misleading, as it is due to one exceptional figure, that for July, and if this were excluded the variation would be reduced to 1·6. Tar, soluble loss on ignition and ash, sulphates, and ammonia all have about the same variation—i.e., 2·65 to 2·84. Total solids give a figure of 3·16.

It would appear from this, therefore, that the soluble matter is more affected by rainfall than the insoluble: the same conclusion as we arrive at from a study of the curves of monthly deposit.

We may, however, examine the table in another way: If rainfall governed the amount of any element of deposit then we should expect the figures giving the amounts deposited per 100 mm. of rainfall to show greater uniformity than the original averages before converting to the 100 mm. standard.

On looking down the column $\frac{\text{maximum}}{\text{minimum}}$ the following facts stand out:—There was during the year a variation in monthly rainfall of 1 to 4·4, thus

TABLE VI.—*Classification.*

October, 1915, to March, 1916. Station.	No. of months	Rainfall in mm.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphuric acid.	Chlorine.	Ammonia
Unit for classification			0·05	1	2	0·75	1·5	5	1	0·3	0·05
Birmingham, Aston	1	44	B	B	C	B	B	B	B	B	B
,, S.W.	1	49	A	B	B	B	B	B	B	A†	A
Bolton	2	89	B	B	C	C	C	C	B	D*	B
Exeter	6	103	A	B	B	B	B	B	B	B	A†
Kingston-upon-Hull	4	55	B	B	B	C	C	B	B	B	A
Leicester	5	82	C	C	B	C	C	C	B	B	C
Liverpool	3	81	C	B	C	C	C	C	B	C	C
London:—											
Meteorological Office	6	69	B	B	B	C	C	C	B	C	B
Embankment Gardens	4	63	D†	C	C	C	D	C	C	C	B
Finsbury Park	6	71	C	B	B	B	C	B	B	B	B
Ravenscourt Park	5	71	B	B	B	B	C	B	B	B	B
Southwark Park	6	69	C	C	C	C	C	C	B	B	A
Wandsworth Common	5	59	B	B	B	B	B	B	B	B	B
Victoria Park	6	57	B	B	B	C	C	C	C	B	C
Golden Lane	6	74	B	C	B	C	C	C	C	B	A*
Malvern	3	52	A*	A*	A*	A*	A*	A*	A*	A*	A*
Manchester:—											
Ancoats	1	27	B	D	D†	C	D*	D†	C	C	B
Bowdon	1	34	A†	A†	B	A†	B	B	B	B	B
Davyhulme	1	38	A	A	B	B	B	B	B	B	B
Moss Side	1	38	B	B	C	B	C	C	B	C	B
Philip's Park	1	30	B	C	C	B	C	C	B	C	A
Queen's Park	4	55	B	B	C	B	C	C	B	C	B
School of Technology	4	60	C	C	B	B	C	C	B	C	B
Whitefield	1	36	B	B	B	C	C	C	B	B	C
Newcastle-on-Tyne	6	69	D	C	C	C	C	C	B	C	C
Oldham	1	42	C	D*	D*	C	C	D*	B	C	B
York	6	49	C	B	B	C	B	B	B	B	B
Coatbridge	6	61	B	B	B	B	B	B	B		
Glasgow:—											
Alexandra Park	5	77	D	B	B	D†	D	C	C	C	B
Bellahouston Park	5	89	C	B	A†	D	C	C	C	C	C
Blythswood Square	6	90	D	B	B	D	C	C	C	C	B
Botanic Gardens	5	101	D	B	B	D*	D†	C	D*	C	B
Richmond Park	5	94	D	B	B	D	C	C	C	B	B
Ruchill Park	5	99	C	B	B	D	C	C	B	C	B
South Side Park	5	95	C	B	B	D	C	C	C	B	C
Tollcross Park	5	91	D	B	B	D	C	C	C	C	C
Victoria Park	5	95	D*	B	A	D	C	C	B	C	C
Greenock	6	99	B	B	B	C	C	B	B	B	C
Leith	5	50	B	B	B	C	B	B	B	B	

* Indicates the letters representing the highest and lowest records for each element in the list of stations.

† Indicates the second (if there is one) in Class A or Class D.

TABLE VII.—*Totals of Classes A, B, C, D for Each Element of Pollution for Two Half Y September, 1914 and 1915, for 12 Stations.*

TABLE VIII.—*Totals of Classes A, B, C, D for Each Element of Pollution for Two Half Y March, 1914–15 and 1915–16, for 38 Stations.*

TABLE VII.

	—	—	A	B	C	D
Soluble. Insoluble.	Tar	1914	3	7	1	1
		1915	2	7	2	1
	Carbonaceous other than tar	1914	0	8	3	1
		1915	2	6	3	1
	Ash	1914	0	8	3	1
		1915	1	7	4	0
	Loss on ignition	1914	1	10	1	0
		1915	1	9	2	0
	Ash	1914	2	8	2	0
		1915	2	9	1	0
	Total solids	1914	1	8	3	0
		1915	1	9	2	0
	Sulphuric acid	1914	5	7	0	0
		1915	3	9	0	0
	Chlorine	1914	4	8	0	0
		1915	5	6	1	0
	Ammonia	1914	4	5	1	2
		1915	3	7	2	0

TABLE VIII.

	—	—
Soluble. Insoluble.	Tar	1914–15
		1915–16
	Carbonaceous other than tar	1914–15
		1915–16
	Ash	1914–15
		1915–16
	Loss on ignition	1914–15
		1915–16
	Ash	1914–15
		1915–16
	Total solids	1914–15
		1915–16
	Sulphuric acid	1914–15
		1915–16
	Chlorine	1914–15
		1915–16
	Ammonia	1914–15
		1915–16

List of Stations used in Table VII.

Birmingham, Central.
Exeter.
Kingston-upon-Hull.
Liverpool.
London:—
Meteorological Office.
Embankment Gardens.
Golden Lane.
Malvern.
Newcastle-upon-Tyne.
York.
Greenock.
Leith.

List of 38 Stations used in Table VIII.

Birmingham, Aston.
,, S.W.
Bolton.
Exeter.
Kingston-upon-Hull.
Liverpool.
London:—
Meteorological Office, Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Victoria Park, Wandsworth Common, Golden Lane.
Malvern.
Manchester:—
Ancoats, Bowdon, Davyhulme, Moss Side, Philip's Park, Queen's Park, School of Technology, Whitefield.
Newcastle-upon-Tyne.
Oldham.
York.
Coatbridge.
Greenock.
Leith.
Glasgow:—
Alexandra Park, Bell
Blythswood Square, B
Richmond Park, Ruch
Side Park, Tollcross
Park.

providing a sufficient range to bring out the effect of variation. It is remarkable to note under these circumstances that in the cases of all elements of deposit, except chlorine and ammonia, there is much more uniformity in the original figures than in those reduced to 100 mm. of rain. In the case of insoluble carbonaceous matter and ash the original figures vary from 1 to 1·4 and 1 to 1·45 respectively, whereas when converted to deposit per 100 mm. rain the range of variation jumps to 1 to 3·62 and 1 to 4·42, showing clearly that these deposits are no direct function of rainfall.

The soluble matters show very little change in the range of variation. Total solids give a range of 1 to 1·67 in the figures before, and 1 to 3·16 after, conversion to the 100 mm. standard. The total deposit is evidently therefore no function of the rainfall.

Insoluble carbonaceous matter, other than tar, has its greatest deposit in July and the next greatest in December, thus corresponding with the two highest rainfalls; but not exactly, since the highest rainfall was in December, whereas the highest deposit of insoluble carbona was in July. The minimum deposit September and April, also correspondi minima; but on the whole the rela means so close as between rainfall matter, as will be seen from the curve

It may be well here to consider difficulties in the way of establish between the deposits:—

(1) Since the soluble parts of apparently related to the rainfall than the insoluble, it is clear that the rainfall at different stations v the relation between soluble a deposits at these stations; hence of stations is open to this object other hand, no single station could to be representative of all, in the deposit.

(2) The nature of the deposit an tions of the different elements of p from station to station, so that th tendency for stations with excessiv

TABLE IX.—*Average Deposit of Each Element of Pollution for Each Month for Selected Group of 23 Stations for the Year from October, 1914, to September, 1915, showing also the Deposit per 100 Millimetres of Rainfall.*

Rainfall in mm. Deposit in tons per K².

	Number of stations observing...	22 1914 Oct.	23 Nov.	21 Dec.	22 1915 Jan.	22 Feb.	23 Mar.	22 April	23 May.	22 June.	22 July.	21 Aug.	19 Sept.	Max	Min
	Rainfall, average	39	77	136	85	83	31	31	53	31	103	72	36	4·4	
Insoluble.	Tar, average	0·11	0·107	0·17	0·11	0·114	0·11	0·11	0·128	0·097	0·14	0·096	0·087	1·95	
	,, per 100 mm. rain ...	0·282	0·139	0·125	0·13	0·138	0·355	0·355	0·242	0·313	0·136	0·133	0·242	2·84	
	Carbonaceous, average ...	2·43	2·30	2·76	2·12	2·16	2·11	2·07	2·52	2·28	2·77	2·69	1·97	1·4	
	,, per 100 mm. rain	6·23	3·0	2·03	2·50	2·60	6·8	6·67	4·76	7·35	2·69	3·74	5·47	3·62	
	Ash, average	5·02	4·56	6·266	4·85	5·06	6·21	5·80	5·83	6·30	5·17	4·326	4·60	1·45	
	,, per 100 mm. rain... ...	12·86	5·92	4·60	5·70	6·10	20·00	18·70	11·00	20·30	5·02	6·02	12·8	4·42	
Soluble.	Loss on ignition, average ...	1·65	1·95	2·54	2·34	1·97	1·40	1·62	1·68	1·125	2·00	1·43	1·51	2·26	
	,, per 100 mm. rain	4·23	2·53	1·87	2·76	2·38	4·52	5·22	3·17	3·63	1·95	1·99	4·20	2·79	
	Ash, average	3·95	4·55	7·40	5·12	5·29	3·70	3·24	3·97	2·99	4·27	3·55	3·83	1·49	
	,, per 100 mm. rain ...	10·13	5·90	5·45	6·02	6·38	11·93	10·44	7·50	9·65	4·15	4·93	10·65	2·68	
	TOTAL SOLIDS, average ...	13·2	13·45	19·13	14·70	14·60	13·55	12·80	15·60	12·80	14·25	11·476	12·00	1·67	
	,, ,, per 100 mm. rain	33·8	17·47	14·1	17·3	17·6	43·75	41·30	29·44	41·3	13·84	15·95	33·33	3·16	
	Sulphates, SO_3, average ...	2·09	2·64	3·83	2·96	2·81	2·10	1·96	2·28	1·70	2·54	1·98	2·04	2·25	
	,, per 100 mm. rain	5·37	3·43	2·82	3·48	3·39	6·78	6·32	4·3	5·48	2·47	2·75	5·67	2·75	
	Chlorine, average...	0·495	0·747	1·29	0·74	0·834	0·494	0·50	0·54	0·360	0·485	0·574	0·37	3·59	
	,, per 100 mm. rain	1·27	0·971	0·95	0·87	1·01	1·60	1·61	1·02	1·16	0·47	0·80	1·03	3·43	
	Ammonia, average	0·079	0·19	0·16	0·214	0·103	0·064	0·075	0·098	0·076	0·098	0·094	0·074	3·35	
	,, per 100 mm. rain	0·202	0·25	0·118	0·252	0·124	0·206	0·242	0·185	0·245	0·095	0·130	0·206	2·65	

TABLE X.—*Average Deposit of Each Element of Pollution for Each Month for the London Stations only for the Year from April, 1915, to March, 1916, showing also the Deposit per 100 Millimetres of Rainfall.*

Rainfall in mm. Deposit in tons per K².

	Number of stations observing...	8 1915 April.	8 May.	8 June.	8 July.	8 Aug.	8 Sept.	8 Oct.	6 Nov.	8 Dec.	8 1916 Jan.	7 Feb.	7 Mar.	Max	Min
	Rainfall, average	26	70	18	92	67	46	39	61	111	37	73	81	6·2	
Insoluble.	Tar, average	0·106	0·15	0·099	0·16	0·115	0·12	0·146	0·243	0·10	0·08	0·17	0·10	3·04	
	,, per 100 mm. rain ...	0·407	0·214	0·55	0·174	0·172	0·261	0·374	0·398	0·09	0·216	0·233	0·124	6·1	
	Carbonaceous, average ...	1·78	2·45	2·34	2·61	2·00	1·605	2·05	3·06	2·335	1·44	2·89	3·05	2·13	
	,, per 100 mm. rain	6·85	3·50	13·00	2·84	2·99	3·49	5·26	5·02	2·1	3·90	3·96	3·76	6·2	
	Ash, average	5·63	6·05	5·46	5·44	4·40	4·17	4·58	8·23	3·86	3·9	6·41	5·72	2·13	
	,, per 100 mm. rain ...	21·67	8·65	30·35	5·92	6·57	9·06	11·75	13·5	3·48	10·54	8·78	7·05	8·73	
Soluble.	Loss on ignition, average ...	1·93	2·2	0·9	2·03	1·25	2·04	2·08	1·83	1·66	1·86	2·21	3·7	4·12	
	,, per 100 mm. rain	7·41	3·14	5·00	2·21	1·87	4·44	5·33	3·00	1·50	5·03	3·03	4·57	4·94	
	Ash, average	3·43	5·64	3·14	4·54	3·29	5·38	6·44	5·66	6·39	4·86	4·3	7·39	2·35	
	,, per 100 mm. rain ...	13·20	8·06	17·44	4·93	4·92	11·7	16·5	9·29	5·76	13·14	5·9	9·13	3·54	
	TOTAL SOLIDS, average ...	12·86	16·45	11·97	14·8	11·06	13·3	15·3	19·03	14·35	12·12	15·94	19·96	1·96	
	,, ,, per 100 mm. rain	49·50	23·52	66·5	16·1	16·5	28·9	39·2	31·20	12·93	32·8	21·8	24·64	5·13	
	Sulphates, SO_3, average ...	1·86	2·64	1·60	2·19	1·46	2·25	2·38	2·09	2·42	1·90	1·80	3·04	2·08	
	,, per 100 mm. rain	7·15	3·78	8·88	2·38	2·18	4·89	6·1	3·43	2·18	5·14	2·46	3·76	4·07	
	Chlorine, average	0·52	0·77	0·395	0·59	0·85	0·50	0·66	0·55	0·775	0·81	0·86	0·86	2·15	
	,, per 100 mm. rain	2·00	1·10	2·20	0·64	1·27	1·09	1·69	0·90	0·70	2·18	1·18	1·06	3·44	
	Ammonia, average	0·085	0·148	0·065	0·146	0·12	0·07	0·114	0·09	0·086	0·06	0·11	0·15	2·5	
	,, per 100 mm. rain	0·327	0·212	0·36	0·159	0·179	0·152	0·293	0·148	0·078	0·162	0·15	0·185	4·62	

govern the nature of any relation brought out by averages.

(3) The length of period considered is too short to justify any far-reaching conclusions.

On the whole, however, it may be expected that any general laws of relationship would apply equally to all stations and should be at least indicated by a consideration of the averages of stations such as we have just dealt with, and the results attained by the method seem to justify this conclusion.

With a view to minimising the sources of error referred to under (1) and (2) the group of eight London stations were treated as in Table IX. for the year from April, 1915, to March, 1916, with the result shown in Table X. In this is also given the deposits per 100 mm. of rainfall and the variation in each constituent. From this table the following list has been prepared showing the incidence of maximum and minimum deposits during the year:—

Months of Highest and Lowest Deposit for Eight London Stations. April, 1915, to March, 1916.

—		Highest.	Second highest.	Lowest.	Second lowest.
Rainfall ...		Dec.	July	June	April
Tar	Insoluble.	Nov.	Feb.	Jan.	June, March, Dec.
Carbonaceous ...	Insoluble.	,,	March	Jan.	Sept.
Ash	Insoluble.	,,	Feb.	Dec.	Jan.
Loss on ignition	Soluble.	March	Feb.	June	August
Ash	Soluble.	,,	Oct., Dec.	,,	,,
Total solids	Soluble.	,,	Nov.	August	June
SO_3	Soluble.	,,	May	,,	,,
Cl	Soluble.	,,	Feb.	June	Sept.
NH_3	Soluble.	,,	May	Jan.	June

FIG. I.

Average Deposit of each Element of Pollution for each Month for Group of 23 Stations.
Prepared from Table IX.

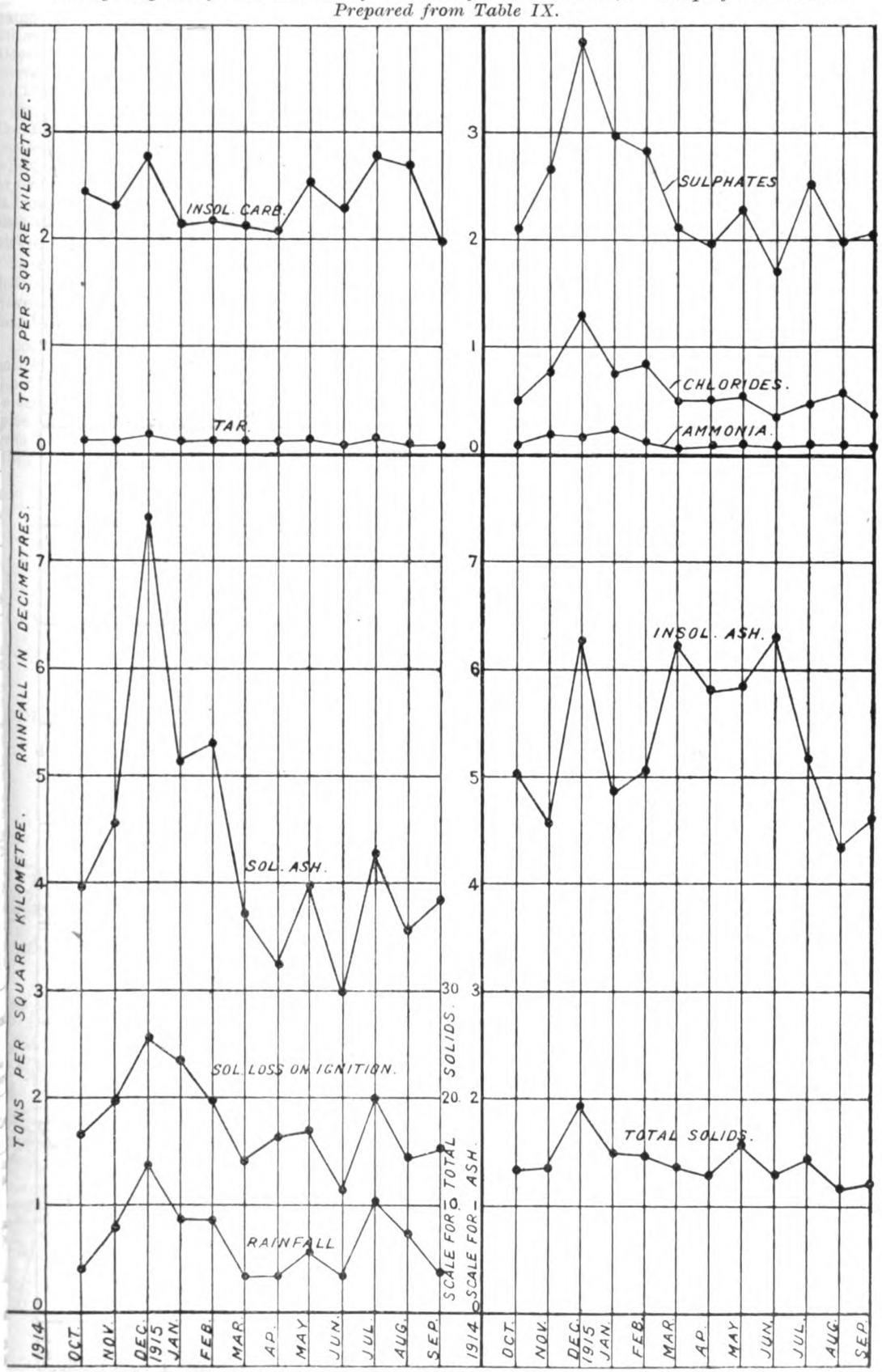
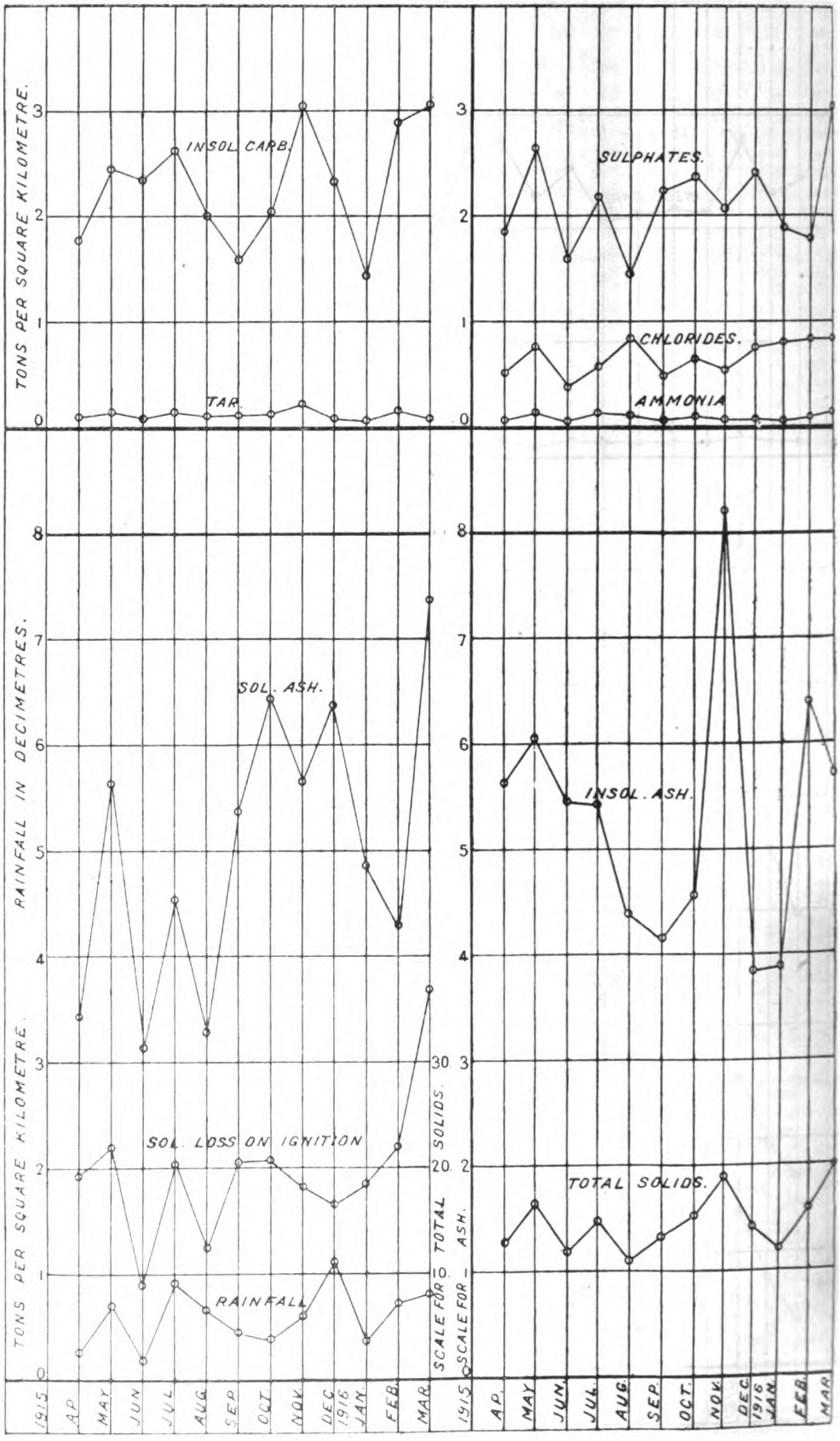


FIG. II.

Average Deposit of each Element of Pollution for each Month for Group of London Stations. Prepared from Table X.



The relations are here more obscure than when the larger number of stations were used. While rainfall was greatest in December, no other constituent of the deposit had its maximum in December. When these figures are plotted in curves they give very irregular results. (Fig. II.) All that can be said is that the soluble constituents correspond more closely with the rainfall than do the insoluble. It would seem on studying the curves, both in this case and Fig. I., that for a while some relation holds good, perhaps for four or five months, and then suddenly it breaks down. It looks as if there was some fundamental relationship overlaid by erratic occurrences which completely obscure it for a time.

In the case of the London stations some such disturbance seems to have taken place about November, 1915, but what its nature was is not easy to say.

Looking at the last column in Table X. we again notice that insoluble carbonaceous matter and ash show less variation in the deposit before being converted to a uniform 100 mm. rainfall, and this in spite of the fact that the monthly rainfall varies from 1 to 6·2 during the year considered. All the other elements of deposit exhibit the same characteristic but in a less marked degree, thus bearing out the conclusion drawn from Table IX.

Referring to the remarks made previously as to the seasonal incidence of ammonia, it is interesting to note for the period April, 1915, to March, 1916, and for the group of London stations considered, that the summer months gave a mean monthly deposit of 0·106, while the mean for the following winter, October to March, was 0·102 ton per K², showing a slight preponderance of deposit during the summer. The difference is not great enough to base any conclusions upon, but may be noted as indicating, if anything, a slight tendency for ammonia to be present in the water collected in greater quantity in summer than in winter.

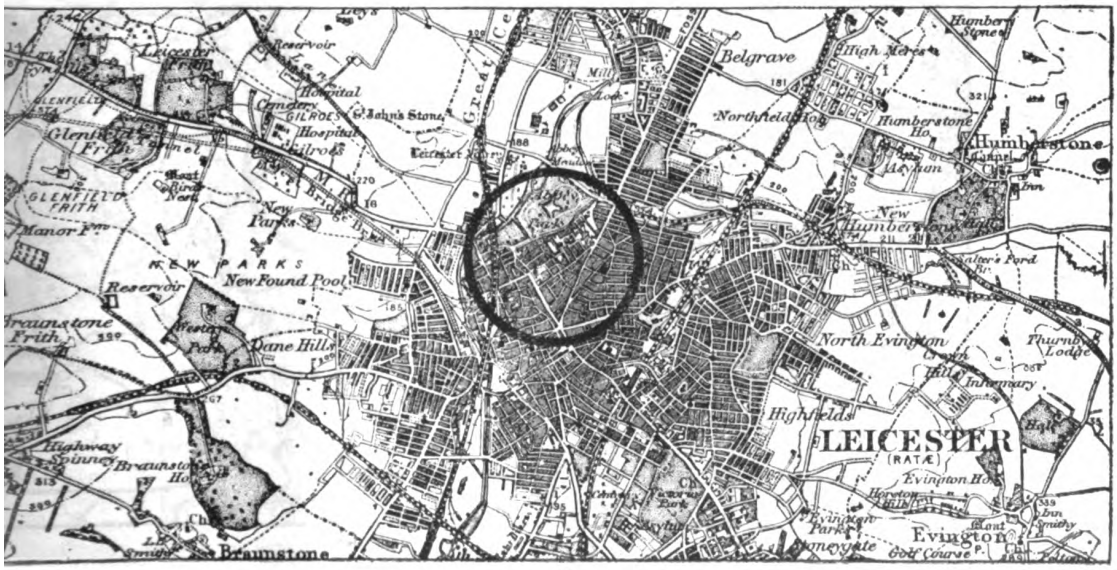
Speaking generally, the Committee feel that in a report of this nature their special duty is to place the statistics on record rather than attempt to deduce any far-reaching conclusions at the present stage of the inquiry. For the reasons already given, the tabular results are presented now in a somewhat abbreviated form, and it has not been possible to analyse in detail the figures from every station. It is hoped, however, that as accurate statistics are made available this will result in stimulating inquiry.

MAPS OF DISTRICTS SHOWING POSITIONS OF THE STANDARD GAUGES

ADDITIONAL TO THE 17 MAPS GIVEN IN THE REPORT FOR THE YEAR 1914–1915

(*SCALE, ONE INCH TO THE MILE.*)

LEICESTER



GLASGOW

(1) ALEXANDRA PARK. (2) BELLAHOUSTON PARK. (3) BLYTHSWOOD SQUARE. (4) BOTANIC GARDENS. (5) RICHMOND PARK. (6) RUCHILL PARK. (7) SOUTH SIDE PARK. (8) TOLLCROSS PARK. (9) VICTORIA PARK.





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Rational Treatment of CONSTIPATION.

By the double action of secretions and peristalsis.

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines, with vegetable extracts of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen.

It is a normal regulator of the gastro-intestinal functions; consequently it improves the metabolic exchanges of the entire organism.

Opolaxyl does not lose its efficacy by prolonged use; its effect is gentle and constant, with the least irritation. It is not merely purgative; it stimulates the defective organs and revives the normal equilibrium; it has a lasting effect because it builds the organs, thus correcting diminutional function.

Opolaxyl is put up in small size tabular form and should be swallowed without crunching at bedtime or before breakfast.

DOSE—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

E———, Scotland, 9th Oct., 1917.

DEAR SIRS,—Having derived considerable benefit from the use of Opolaxyl tablets in my own personal case, I write as a practising physician to ask if you would make any reduction of price in the event of my sending you an order for a fair quantity, say, one dozen bottles.

Yours faithfully,
C. A——, M.D.

URASEPTINE

The Most Powerful and Effective Urinary Antiseptic.

URASEPTINE is a granulated product entirely soluble in water, its bases being **Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium.** It contains 60 centigrams (10 grs.) of active matter to each teaspoonful.

DOSE.—2 to 6 teaspoonfuls daily.

It purifies the Urine, and this action is due to its three principal properties:

1. **It is a URINARY ANTISEPTIC.**
2. **A SOLVENT of URIC ACID and of PHOSPHATES.**
3. **A MILD NON-TOXIC DIURETIC.**

INDICATIONS.—Arthritism, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus, &c., Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, &c.

LITERATURE and CLINICAL REPORTS on REQUEST.

THE ANGLO-FRENCH DRUG CO., Ltd.

(LATE M. BRESILLON & CO.),

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Recurrent Fever
SYPHILIS
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Sleeping Sickness

GALYL

3000 Injections (INTRAVENOUS) of GALYL were given in one of our Service Hospitals.

"No case has given the slightest cause for anxiety, and the clinical results are very satisfactory."—*Staff-Surgeon's Report.*

IMPROVED INTRAMUSCULAR INJECTION.

The GALYL is in the form of a Sodium Salt in a weak solution of Glucose. This is much easier to use and more rapidly absorbed than the oily emulsion. It is in every way identical with the intravenous efficacy, dose, price, &c., only differing in administration.

Thorough and exhaustive tests in various parts of the Kingdom have proved it to be equal in every way with the intravenous; moreover, patients may resume and continue their occupations without inconvenience after injection of Intramuscular GALYL.

Medical Treatment of CANCER.

CUPRASE

Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid.

The numerous clinical reports from Doctors of repute in various countries give cases of a great variety. In all of these pain has been eliminated, and in a good percentage cures are claimed, and in no instance any undesirable effects.

Its *easy application* (subcutaneous injections) places it within the reach of all practitioners. It *is not toxic.*

Disappearance of the Pain.
Return of Sleep.
Increase of Appetite.
Colour and Strength.

WARWICKSHIRE, July 1st, 1917.

DEAR SIRS,—Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower-like growth has disappeared with its offensive discharge.

This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,
(Signed) B—— B——, M.R.C.S., L.R.C.P.

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(The only Authorised Preparation of Dr. Barthe de Sandfort. Various Imitations compel us to make this statement.)

GOUT
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The most efficient means and method of ensuring active **Hyperthermal-Therapy** to the practical treatment of **Burns, Varicose Ulcers, Rheumatism, Gout, Arthritis, Neuralgia,** and similar affections.



Although the dressing with AMBRINE is occlusive and adhesive, it becomes after a short period non-adhesive, and can be removed without pain, hæmorrhage, or injury to the newly forming tissues. The healing takes place without leaving scars or contraction.

May be applied with a camel's hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of wounds or extensive surfaces.

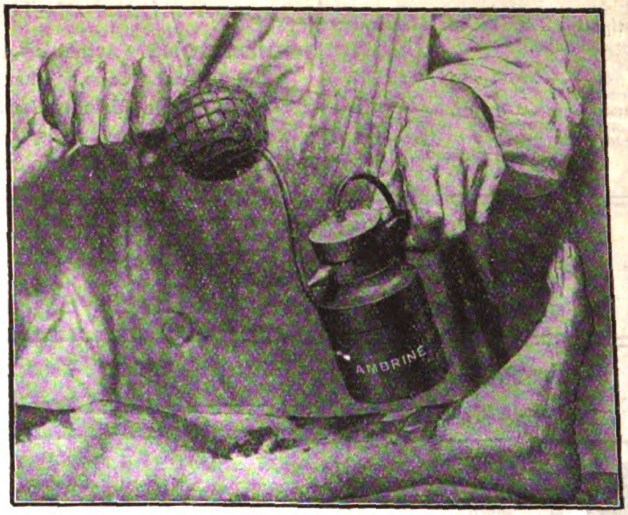
The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

"..... The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient, because entirely painless; it is convenient to the surgeon, because easily and quickly applied. ..... It is possible that the treatment would be useful in dealing with ordinary ulcers, and in any case it is certain that the study of its application to the raw surfaces is worth pursuing. ....."

K——, co. Tipperary,
8th Oct., 1917.

Dr. H—— returns thanks to the Anglo-French Drug Co., Ltd., for the Ambrine, and found it very satisfactory.
Herewith enclose P.O.



THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

"Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War, in reply to the Deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ....."

The SCIENTIFIC TREATMENT of INFLUENZA and Allied Ailments.

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FORMULA:— Chlorhydrate of Quinine c. Hectine—i.e., *Benzo-sulfone-para-amino-phenyl-arsenate of Quinine.*

Non-toxic, produces no ill results. Easily taken (tablets) and well tolerated.
Highly satisfactory clinical results.

Not only a prophylactic against, but a specific in, **INFLUENZA, Catarrh, Coryza, NEURALGIA, Malaria, &c.**

H.M.S.———, 27-7-17.

SIR,—I enclose P.O. for the tube of Kinectine. The drug has given every satisfaction.
The Anglo-French Drug Co., Ltd., Holborn, London, E.C. W. B. H. W., Surgeon, R.N.

LITERATURE ON APPLICATION.

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LONDON: SATURDAY, OCTOBER 27, 1917.

The Position of Practice under the National Insurance Act.

A CONFERENCE of Representatives of Local Medical and Panel Committees of Great Britain was held in London on Oct. 18th under the auspices of the British Medical Association. A year had gone by since the last Conference, and some of the points at issue then were found to have been cleared up, while the focus of interest has shifted in regard to others. The perennial difficulty in grasping the working of the "central pool" has remained in spite of the persuasive memorandum issued by the Insurance Commissioners, and the recent Conference decided without hesitation to ask the Commissioners to allow six representatives of the Insurance Acts Committee of the British Medical Association to assure themselves, with the aid of an actuary, that all the money received on account of medical benefit did really find its way into the medical practitioners' pockets. In this connexion the existence of "inflation" of the panel list and its effect on medical accounts was fully recognised, being understood more readily in view of the growing familiarity with the process in other departments of life. Admittedly there is less inflation in the case of munition centres than in other areas, but no action was taken in the direction of pressing for preferential treatment of panel practice in urban areas. The Conference was unanimous in wishing to be assured that the total pool was correct, but was not squeamish about its distribution. On the contrary, a keen sympathy was expressed with the difficulties of the rural practitioner, which are at their greatest in Scotland (cf. p. 656). During the year a Rural Practice Subcommittee has been at work considering the special hardships of rural panel practice. Two of these hardships have been sadly accentuated during the past 12 months. The discharged service man in the country cannot attend personally at his doctor's dispensary, but must be visited, it may be at a great distance. The cost of petrol has gone up by leaps and bounds without corresponding increase in the mileage allowance. The rural practitioner's time is as valuable as that of his colleagues, and whether or no the mileage allowance covers the out-of-pocket expenses of his journeys, he has at all events to bear unrequited the expenditure of time involved.

The Conference confirmed by an overpowering majority the decision of the Insurance Acts Committee of the British Medical Association in regard to the payment for attendance on the disabled service man by visit instead of on a capitation basis. In so doing there was apparently no intention of reversing the doctrine t capitation fee is the ideal system for medica ment of an insured population. Under w other treatment—specialist, training, re-edu —the disabled man comes, the capitation does nothing else, ensures his surveillance own family doctor. The arrangement was rega the Conference, as by the Insurance Acts Co which made it, in the light of a temporary ex in order to elucidate the question whether abled soldier is likely to be a more cons charge on the practitioner's time and skill average panel patient. Since the decisi made, however, various factors have com complicate the situation. With some of t deal on pp. 655-6. Treatment by general an hospitals of disabled men as out-patient becomes the general policy of the Pensions M may result in taking this work so comple of the hands of the practitioner that earned per visit may work out, in fa than a capitation fee on the old lin this whatever may be the decision of th tary staffs of hospitals in regard to th remuneration. The principle of the capita was, indeed, vindicated by the unanimous the Conference to empower the Insuran Committee to press for an increase of th tion fee to a sum of 10s. per insured per sum to cover increased liabilities in regar charged sailors and soldiers, as well as all now rendered to tuberculous patients b doctors. The steadily increasing cost of li of carrying on practice makes this de logical one, in spite of the attitude taken u ago not to press the matter on patriotic The increased cost to the Insurance Comm of raising the capitation fee was stated to half a million pounds, the increase implyi of 43 per cent. on the panel practitioner's income, or an addition of £3 per week on of 1000. It is to be hoped that this r equitably solve even the difficulties of t practitioner in regard to mileage and petro

The scheme for collective bargaining d by the Insurance Acts Committee of the Medical Association, as well as its appli the principle during the past twelvemo with the general approval of the Co although a small but vocal section expr dissatisfaction with the representation of by the Committee, not on personal groun the basis of political expediency. It was arg negotiations affecting the panel service carried on by direct representatives of the panel committees, and that for this pu association of panel committees or a panel political union would be more appropria committee of the British Medical Associati movement is an interesting one for a more trades unionism within the medical pro a time when the Labour Party itself taken the step of extending the basis of sentation, and it may not be unfair to the constitution of the British Medical As with that of the reconstituted Labour Pa

divergence of opinion on the part of this section of the Conference did not prevent it being perfectly clear that the Insurance Acts Committee of the British Medical Association commands the confidence and support of panel practitioners in general. The Committee is not directly under the control of the Association, the present Conference has chosen half of its elected members, and its constitution can still be further amended. The Committee has earned approval by consistent endeavour to further the interests of the medical profession at large, and by its efforts to consult the constituency on all important negotiations whenever delay did not endanger the successful carrying through of these negotiations. Collective bargaining has become an approved method in panel practice with the Insurance Acts Committee as the bargainer.

New Limbs for Old.

THE early weeks in the installation of a new head at the Pensions Ministry are justifying its claim to be regarded as a Ministry of Restoration. The Statutory Pensions Committee which bequeathed to the Ministry its well-organised Local Pensions Committees found prime difficulty in the fact that the great dearth of labour made it possible for almost every discharged man to get work without training; and the men therefore generally did refuse training and went to work without. The new Ministry has been concerned to make such generous terms with disabled men undergoing treatment and training that military compulsion could not have been a more potent inducement to them to become effective workers. In an admirable article in the October number of "Recalled to Life," the editor, Lord CHARNWOOD, relates his own conversion to this view, and his general survey of the whole subject of disablement will serve to clear the minds of a wide circle of readers. The practice of orthopædics has received further impetus from the visit of the American orthopædic surgeons under the leadership of Dr. JOEL GOLDTHWAIT, of Boston, and from the institution by the Pensions Ministry of an experimental institute to evolve appliances to help disabled men.

The problem of designing artificial limbs which will really assist men in their work was the subject of an important discussion this week at the Medical Society of London. Major R. C. ELMSLIE dealt chiefly with the designing and fitting of artificial limbs on the basis of the work at Roehampton. He showed typical examples of this work, which represents an immense mechanical advance on pre-war methods. Mr. E. MUIRHEAD LITTLE devoted his remarks chiefly to the adaptation of amputation stumps to the artificial limbs they were designed to carry. End-pressure and leverage, the two important factors to consider, have quite different values for the upper and lower limbs. Artificial limbs for the lower extremity are a comparatively simple matter, their use is limited and definite: all that is required is that the appliance shall be strong and reasonably light, that it shall give good stability in standing, and that the gait shall be natural. Prosthesis for the upper limb is another matter. An artificial arm must be a real working tool. Only in the professional classes and for æsthetic reasons will an artificial arm which is passive and of no practical use be worn. In order that appliances suitable for all classes of the community may be at hand it will be necessary to have either a number of different models or else a model made in standardised interchangeable parts, by assembling which appropriately a limb can be made which is adapted to the needs of any trade or profession. The materials and mechanism should be such as to secure lightness with strength, and if it is possible without losing efficiency the shape should closely resemble that of the natural limb. It might be thought that the artificial arm was necessarily a passive appendage, hanging by its attachment to the stump but possessing no active mobility of its own. This, however, is not true; at least three movements can be transmitted from the chest and shoulder to the artificial limb, and these can be utilised to produce active flexion of the artificial elbow-joint, locking and unlocking of this joint, and opening and closure of the fingers of an artificial hand, or of a grip which replaces it. All these requirements and possibilities serve to indicate that the design of an artificial arm is a complex mechanical problem really requiring for its solution the consideration of a mechanical engineer of technical ability and experience. The necessities of war surgery have enlisted the assistance of engineers in this direction, and the address on "Mechanical Artificial Arms," delivered by Mr. E. W. HOBBS, A.I.N.A., at the Junior Institution of Engineers, on Oct. 15th, embodied the results of two years' experimental work. This work was originally undertaken at the instigation of Major ELMSLIE, and the results attained indicate both the complexity of the problem and the success that can be reached if mechanical ingenuity and experience work in coöperation with surgical advice. A simple arm can now be supplied which enables its bearer to do the hardest manual work, even to the swinging of a sledge hammer, while in a few minutes this same arm can be rendered sightly and mechanical movements added making it suitable for a professional man. Even when the whole limb is lost at the shoulder-joint an artificial limb can be fitted capable of voluntary movement at both shoulder and elbow, and of great use to a clerk or for other light occupation.

But the problem of artificial arms is not solved with the invention of a suitable appliance and its adjustment to the patient. There are complaints abroad, and well-founded ones, that men to whom artificial arms are supplied do not use them in their work. The reason for this state of affairs is threefold. In some few cases the arm is useless for the man's particular work, in others the arm is uncomfortable because it is unsuitable or is a bad fit, but most often the real reason is that the man has never learnt to use his arm, in his trade, to its best advantage. An artificial arm is a tool, its use must be learnt, just as is the case with any other tool. Some men will

shall be natural. Prosthesis for the is another matter. An artificial arm is working tool. Only in the professions for æsthetic reasons will an artificial passive and of no practical use be ever that appliances suitable for all cases munity may be at hand it will be necessary either a number of different models made in standardised interchange assembling which appropriately adapted which is adapted to the needs of any fession. The materials and mechanism such as to secure lightness with strength is possible without losing efficiency should closely resemble that of the It might be thought that the arm was necessarily a passive appendage by its attachment to the stump ing no active mobility of its own ever, is not true, at least three movements transmitted from the chest and shoulder artificial limb, and these can be made active flexion of the artificial elbow and unlocking of this joint, and opening of the fingers of an artificial hand which replaces it. All these movements, unless serve to indicate that the artificial arm is a complex mechanism really requiring for its solution the attention of a mechanical engineer of high and experience. The necessities have existed the assistance of such direction and the address on "Mechanical Arms" delivered by Mr. E. W. Smith at the Junior Institution of Engineers embodied the results of two years' work. This work was originally undertaken at the instigation of Major Edmunds, and the results attained indicate both the complexity of the problem and the success that has attended mechanical ingenuity and experience in co-operation with surgical advice. Artificial arms can now be supplied which enable the wearer to perform the hardest manual work, even to wielding a sledge hammer, while in a few cases the artificial arm can be rendered sightly and free from movements added making it suitable for social man. Even when the whole arm, including the shoulder joint an artificial arm is not capable of voluntary movement at the shoulder and elbow, and of great use to a man in many kinds of light occupation.

But the problem of artificial arms does not end with the invention of a suitable limb and its adjustment to the patient. Surgical experts abroad and well-founded complaints abroad, to whom artificial arms are supplied, fail to use them in their work. The present state of affairs is threefold. In many cases the arm is useless for the man who wears it; in others the arm is uncomfortable or is unsuitable or is a bad fit. The real reason is that the man has not learned to use his arm, in his trade, to its best advantage. An artificial arm is a tool, its use is a skill, like any other tool, and must be learned. Many men will realise this of their own accord and will set to work to learn the proper use of their limb, but others think that the artificial arm is going to replace the natural one without any effort of adaptation upon their part. Such men must be taught to use their limb by an actual training, first in the general use of the artificial arm, and then in its adaptation to their special trade. Until an artificial arm has been tested by such methods as these it should not be condemned as useless. It would seem that provision for training in the use of artificial arms, either in the hospitals which fit the limbs, or else in local schools or workshops, is required if much of the money which is being spent upon these appliances is not to be thrown away, and if the full work of the armless man is to be secured. A Bill is before Parliament for the representation on Local Pensions Committees of the disabled men themselves, and we trust that they will give careful attention to this need.

Annotations.

"Ne quid nimis."

THE INVESTIGATION OF ATMOSPHERIC POLLUTION.

WE publish this week in a special supplement the second report of the Committee for the Investigation of Atmospheric Pollution, the observations recorded being those made during the year 1915–16. The first report appeared in our columns of Feb. 26th, 1916, but since that date an important change has been made in the whole scheme of investigation. The work is now done under the ægis of the Meteorological Office and the original committee has been constituted an "Advisory Committee on Atmospheric Pollution" to that office. The undertaking thus receives official recognition and properly enjoys a status which association with an important Government department confers. The committee has received from the Department of Scientific and Industrial Research a grant in aid of the expert work involved in the investigations, and thus the pecuniary assistance needed to carry on the practical work should be assured. The present position is one on which the pioneers of the movement are heartily to be congratulated: it amounts to a well-deserved official recognition of work instituted and sustained by what was hitherto a purely voluntary body.

In the present report many interesting observations are made, though the reduction in the number of observers, that has taken place owing to the demands of the war has curtailed activities in some directions. But, as is appositely pointed out, the connexion between atmospheric pollution and fuel economy is of vital importance just now, for such inquiry brings to light the loss of combustible matter represented by the soot suspended in the air. The economic bearing, in other words, has assumed an increasingly serious aspect owing to the call for utilising the energy of coal on a more scientific basis. This question is receiving the attention of the Fuel Research Board which, amongst other things, is considering whether the 35 to 40 million tons of raw coal, which is used every year for domestic heating in this country, can be wholly or partially replaced by smokeless fuel, solid and g prepared by the carbonisation of this coa importance of such an inquiry was urged l by the Committee for the Investigation o spheric Pollution, and practical investigatio abundantly shown what an appalling w fuel, with consequent pollution of the injury to health, our present methods of d heating involve. In last year's report it wa that taking the case of the County of Londo the total quantity of matter deposited from during the year was approximately 54,20 practically all derived from coal smoke. The report shows, broadly, that far from an i ment having been effected, there has been at seasons of the year a heavier deposit in than in 1914–15. A detailed analysis of the is set out in the report and they afford an i ing study of the probable causes which u the variations in kind and amount of the collected at different seasons. To quote e showing the months of highest and lowest for each element of pollution prepared f average of 23 stations, we find that the loss on ignition and ash of the soluble ma well as sulphates, show the highest dep December, the second highest in Janu February, and the lowest in March, April, thus corresponding closely with the mon greatest and least rainfall. This clearly esta a relationship between the deposit of soluble and rainfall. Tar and total solids hav greatest deposit in December and least in Sep and August. Generally speaking, maximum occur in the winter months and minimum in summer. It is suggested that a prepon of insoluble ash in the summer may be ac for, not by smoke pollution, but by dust, soluble matter is more affected by rainfall t insoluble. There is a mass of valuable mat this report, and it represents careful work i directions, but there are still some factors n and this fact precludes positive assertion made as to the exact meaning of the results present stage of the inquiry. For example, that measuring *deposited* impurity cannot complete information as to the degree of spheric pollution is admitted in the repo some extent such estimation leaves out sideration of more or less permanently su matter, and particularly gases, such as dioxide and ammonia. In dry weather thes would not reach the gauge. The attention committee is being given to this matte statistics placed on record by the commit however, extremely instructive, and as furth is carried out the results obtained will bring the possibility of making the conclusions de

THE COMING MINISTRY OF HEALTH

Mr. Bonar Law, Chancellor of the Exc stated in the House of Commons last we the creation of a Ministry of Health is un consideration of the Government, but present no general solution of many obvio culties had been agreed upon. In these stances it is clearly wise not to introduce but we cannot help feeling that a discussio House might tend to remove some of the c discord. Steps are being taken, the Hou informed by Mr. Bonar Law, under which ment will be ensured among those who are

engaged in the work of national health. We do not feel certain that those steps will have that result; the whole medical profession is included "among those who are actively engaged in the work of national health," and considerable divergence of opinion seems to mark their views as yet. For example, a large number of those most critical in days gone by of the working of the National Insurance Act are now prepared to regard that Act more favourably; they would give to the National Insurance Commission a predominant part in the future Ministry of Health. Dr. W. A. Brend, on the other hand, will have much support for the views which he puts forward in the current number of the *Edinburgh Review*. He premises in a short essay on the future of the Public Health Services that experience of the working of the Insurance Act has shown that measure to be seriously defective, and considers that it is an open secret that the National Insurance Act has not fulfilled in many directions what was hoped of it. The creation of a Ministry of Public Health is certain to take place, though the difficulties in the way of so important a piece of Parliamentary work are immense at the present moment. We trust that there will be no long delay, but we realise that to undertake so critical a piece of work, when due opportunity is wanting for full consideration of the accompanying difficulties, would not be promptitude on the part of any Government, but only mischievous yielding to the view of the muddler that something had better be done, whether for good or for evil. As we have pointed out several times in these columns, the position of National Insurance presents considerable difficulties to the designers of a Ministry of Public Health. The general view, and one which we have endorsed, is that the Local Government Board should become the over-authority for National Insurance, but Dr. Brend believes that the office of the Registrar-General should be enlarged and should take over the work of the Insurance Commissioners as well as the whole scientific and statistical work in public health at present performed not only by the Local Government Board but by the Home Office and the Board of Education. We admit that the Department of the Registrar-General could make a good claim if its scope were widened and its staff reinforced by experts, but we remain of opinion that if the National Insurance Commission does not remain a separate bureau, its right place is in a Ministry of Public Health, forming a department of the Local Government Board, and working in that department alongside of the machinery now employed to discharge the medical work of the Home Office and the Board of Education. There seems no doubt that we must not expect any concrete proposals from the Government for the creation of a Ministry of Public Health just yet, but this appears to us to be no reason why matters that require immediate reform should remain unattended to until a vague and future date. We are glad to learn that it is the intention of the President of the Local Government Board to ask the War Cabinet to allow him to introduce a Bill into the House of Commons immediately, so that it should be passed before Christmas, to deal with the many questions concerned with infant welfare. It is evident from his reply to recent deputations that he sees no need whatever to wait for the introduction of a measure to deal with certain existing evils until the Ministry of Health Bill, and he incidentally corrected a mistake made by Mr. Kingsley Wood in a letter recently published in the *Times*, who had used the argument for the establishment of a Ministry of Health that it would "save a thousand lives a week." Mr. Wood put that prediction into the mouth of Lord Rhondda. Lord Rhondda really said that he hoped that a Maternity and Infant Welfare Bill would save a thousand lives a week. Dr. Brend, in the *Edinburgh Review*, misrepresents Lord Rhondda in exactly the same way.

THE HARVEIAN ORATION.

Professor R. Saundby, in the Harveian Oration which we print in another column, considers Harvey's work in relation to the scientific knowledge and the university education of his time, especially university education in medicine. Harvey himself was a pensioner of Gonville and Caius College, Cambridge, where he entered in May, 1593, being then 16 years of age, and where he took his baccalaureate three years later. He then left Cambridge to study medicine at the University of Padua, where there was at the time a famous medical school; and while it is admitted that Harvey was the true discoverer of the circulation of the blood, it is fairly clear that our famous British philosopher did not owe so much to his English as to his Italian university, where many eminent philosophers were congregated at the beginning of the seventeenth century, and where he probably acquired the methods of research which led him to his great discovery. Professor Saundby's dissertation is largely about other people than Harvey, and forms an interesting chapter of medical history.

ACUTE NEPHRITIS WITHOUT ALBUMINURIA.

Dr. Carl Müller, of Christiania, has recently recorded[1] an interesting case of acute nephritis in which albuminuria was absent during the greater part of the attack.

The patient, a factory girl aged 26, was ill with "kidney disease" for two months in 1914. In 1916 she had a sore-throat and kept to her bed for a fortnight; the urine was free from albumin and no diphtheria bacilli were found on examination of a swab from the throat. After this she had headache and shortness of breath, with palpitations and a troublesome dry cough; a week later her face and hands swelled and she had pains in the back. Dr. Müller examined the urine and found no trace of albumin in it. The girl was living in miserable surroundings and was taken into hospital. Here she was found to have slight œdema of the legs, with a high blood pressure (185 mm. Hg), an irregular pulse of 60, slight hydrothorax and ascites, and a small trace of albumin in the urine when Heller's test was applied. No formed elements could be found in the centrifugalised urinary deposit. A few days later the percentage of urea in the blood was observed to be raised, standing at 0·025 per cent. The patient had severe headache, dyspnœa, and vomiting for the first 24 hours, with anorexia. On the fourth day she was put on to a salt-free diet of vegetables, bread, milk, tea, and water, and improved considerably. The œdema and fluid exudations were absorbed, the urine increased from nearly two to over four pints a day, and the blood pressure fell to the normal. The trace of albuminuria vanished after a week; at no time could cells or casts be discovered in its centrifugalised sediment. A Strauss test applied to the kidneys later showed that the renal excretion of both salt and water was normal.

Discussing this case, Dr. Müller comments on the extreme rarity of the instances of acute nephritis without albuminuria recorded in the pre-war medical literature. In trench nephritis, on the other hand, or in war nephritis as he prefers to call it, absence of albuminuria has often been recorded even in instances in which uræmic convulsions have occurred, and he points out that his recorded case in many ways resembles one of war nephritis. The

[1] Tidsskrift f. d. Norske Laegeforening, Christiania, 1917, xxxvii., 481

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THE HARVEIAN ORA...

Professor R. Saundby, in the fir... which we print in another co... Harvey's work in relation to the scie... and the university education of ... university education in medicine ... was a pensioner of Gonville an... Cambridge, where he entered in ... then 16 years of age, and whe... baccalaureate three years later. He ... bridge to study medicine at the Univ... where there was at the time a fa... school, and while it is admitte... was the true discoverer of the ... blood, it is fairly clear that our ... philosopher did not owe so much ... as to his Italian university, where ... philosophers were congregated at ... the seventeenth century, and was ... acquired the methods of research ... his great discovery. Professor Sir... tion is largely about other people ... forms an interesting chapter of ...

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The patient, a factory girl aged 18, ... disease for two months in 1914. It ... throat and kept to her bed for a fort... free from albumin and no diphtheria ... examination of a swab from the thro... had headache and shortness of breath ... a troublesome dry cough; a week later ... sweated and she had pains in the ... examined the urine and found no ... it. The girl was living in miserable ... taken into hospital. Here she was ... œdema of the legs, with a high blood pre... an irregular pulse of 60, slight arte... and a small trace of albumin in the ur... was applied. No formed elements ... centrifugalised urinary deposit. A fort... percentage of urea in the blood was ... standing at 0·025 per cent. The patient ... vomiting, and vomiting for the first ... on the fourth day she was put on ... vegetables, bread, milk, tea, and eggs. ... œdema and fluid exudat... gradually. The urine increased from nearly two ... and the blood pressure fell to the norm... albuminuria vanished after a week. ... casts be discovered in its deposit ... or casts test applied to the kidneys ... urea excretion of both salt and wate...

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attempt has been made to explain some of these cases of œdema without other evidence of renal disease as due really to lack of vitamines in the food; the absence of nervous symptoms makes this explanation improbable. Again, it has been suggested that the lack of albuminuria in acute nephritis may be due to patchy involvement of the renal tissue with failure of the inflamed portions to secrete any urine; Dr. Müller thinks this explanation untenable, in view of the high blood pressure met with in such patients. He comes to the conclusion that acute nephritis without albuminuria is commoner in civil practice than is generally suspected.

THE VINDICATION OF A MEDICAL REPUTATION.

Dr. S. D. Clippingdale points out that Nov. 6th is the anniversary of what he describes as a "tragedy in the annals of English obstetrics," the delivery and death of H.R.H. the Princess Charlotte of Wales. The untoward event is thus announced in a *London Gazette Extraordinary* issued at the time:—

"Her Royal Highness the Princess Charlotte of Wales was delivered of a stillborn male child at nine o'clock last night, and about half-past twelve Her Royal Highness was seized with great difficulty of breathing, restlessness, and exhaustion, which alarming symptoms increased till half past two o'clock this morning, when Her Royal Highness expired."

The Princess was in her twenty-first year. Her grandmother, Queen Charlotte, had been attended in her 13 confinements by a midwife, a Mrs. Draper, with the happiest results. When, however, the Princess Charlotte was known to be pregnant and an heir to the Throne anxiously desired, it was decided to take every possible precaution. Hers was the first Royal accouchement to be attended by male practitioners. Three were employed—Dr. Mathew Baillie, Dr. John Sims, and Sir Richard Croft. Of these, Sir Richard Croft was regarded as a specialist and controlled the case. Croft, although he appeared as a maternity specialist, apparently possessed no medical qualification. He was at Oxford for a short time, where Foster, in his "Alumni Oxoniensis," describes him as "chirurgus privilegiatus," but mentions no degree. He was not a Member of the Royal College of Physicians, was not upon the staff of any hospital, nor had he contributed anything to medical literature. He was, however, a man of high social position, and possibly his social position had something to do with his Court appointment. He inherited a baronetcy conferred upon his ancestor by Charles II. He married a twin daughter of Dr. Denman, the famous obstetrician (to whose practice he succeeded). Dr. Baillie, his colleague, married the other twin, so that there was a personal as well as a professional relationship between these gentlemen. The Court wished the Princess's confinement to take place at Kensington. The Princess, however, preferred Claremont, 15 miles away, and, at that time, not easily accessible. The labour was protracted and abnormal. There was hour-glass contraction of the uterus. The infant was known to be dead some hours before it was born, yet no steps were taken either to remove it or to terminate labour. The Princess was in an enfeebled condition from low diet, repeated bleedings, and unrelieved bowels. Finally there was post-partum hæmorrhage. A Mr. Jesse Foot demanded a public inquiry, stating, upon the report of the nurse, that when the infant was born, all three doctors were fast asleep. This, however, was denied by Dr. Sims, who, in a letter will be found in Playfair's "Midwifery," "It has been said we had all gone t... but this is not a fact. Baillie retired about ... I lay down in my clothes at 12, but Croft nev... her room." A path is still shown at Clar... where Sir Richard Croft had walked up and ... in agony not knowing what to do for the be... Foot's statement that he went to bed is a libe... command of the king a post-mortem exami... was made by Sir Everard Home and Sir ... Dundas, who reported to the king that there ... evidence of neglect, but that everything had ... done which "human science could devise or l... skill effect." The event so preyed upon the m... Sir Richard Croft that three months later h... himself.

COLD AND COLDS.

THE bleaker days of early autumn have accompanied with an abundant crop of cold... the sequence is such a usual one that many p... perhaps the large majority, regard their cata... being directly caused by the reduction of tem... ture by what they call a chill. The belief ... proof, inasmuch as precaution is generally ta... avoid the reduced temperature by means of ... ficial heat in houses and offices and the clos... windows in railway carriages. But this prec... introduces complicating factors. The indo... becomes more stationary and humid; air-p... are present in which little interchange o... there is a sharp dividing line between indo... and outdoor air; and with these altered t... conditions there is a tendency to crowd togeth... an increased nearness of contact in family ... In one respect, however, the conditions ... should be changed in the coming winter. F... dear and scarce, and it is both economica... patriotic to be sparing in its use. This will ... a reduction in indoor temperature, and less ... ence between indoors and outdoors. It w... worth noting whether the result is an in... or decrease of colds.

THE King has nominated Dr. J. C. McVail ... further period of five years a Member of the Ge... Medical Council for Scotland.

NEWS has been received of the death, at th... of 60 years, of Sir C. Pardey Lukis, honorary su... to the King, who has held the position of Dir... General of the Indian Medical Service for a per... nearly eight years.

THE Bradshaw Lecture of the Royal Colle... Physicians of London will be delivered at ... College by Professor Ernest S. Reynolds on T... day, Nov. 8th, at 5 o'clock, the subject ch... being "The Causes of Disease."

THE Bradshaw Lecture of the Royal Colle... Surgeons of England will be delivered in ... theatre of the College by Sir John Bland-Sutto... Thursday, Nov. 8th, at 5 P.M., the subject of ... lecture being "Misplaced and Missing Organs."

THE opening meeting of the Röntgen So... will be held on Tuesday, Nov. 6th, at 8.15 P.M. ... the Royal Society of Arts. The preside... address, on "The Part Played by X Rays in ... War," will be delivered by Captain G. W. C. K... M.A., D.Sc.

DEPARTMENTAL COMMITTEE ON THE WELFARE OF THE BLIND:

NOTES ON THE REPORT.

BY ARNOLD LAWSON, F.R.C.S. ENG.

AN immense amount of careful, patient, and thorough work is revealed in this report, which is a most complete and thorough exposition of a complicated national problem. A cursory glance through its seventy odd pages shows this much, whilst it may be stated that there is not a paragraph which will not repay careful reading and thoughtful consideration. The various issues raised in the discussion of this large subject have each of them received ample attention by the division of the Report into 12 sections or heads followed by a general summary and conclusions.

Definition.—Statistics and Causation.

These sections commence with the Report of the Royal Commission of 1889, followed next (Section II.) by a most interesting outline of the scope of the problem. This includes statistics and data with regard to the number and occupations of the blind and particulars of the present position as indicated by reports furnished by the various institutions devoted to helping the blind and by the Poor-law returns. The section commences by defining blindness for the purpose of the Report. In the case of children the definition adopted by the Elementary Education (Blind and Deaf Children) Act, that in this Act the expression "blind" means too blind to be able to read the ordinary school-books used by children, is considered satisfactory. The definition of blindness in adults has always been a difficult matter, as obviously it is a term that can be applied with fairness to a large number of those who still have a little sight, though insufficient to enable them to lead independent lives. The Report decided to adopt the definition of blindness as expressed by the subcommittee of the Ophthalmic Section of the Royal Society of Medicine and adopted by the council of the section (1915), which suggested that "blind means too blind to perform work for which eyesight is essential." It is not likely that any will be disposed to question this definition as being fair, practical, and covering all debatable ground.

The Report then goes on to deal with statistics as to blindness and the causes of blindness. It points out that with regard to the number of the blind in this country the want of an exact definition as to the meaning of the term has made statistics very unreliable. So far as can be gathered, there seems of late years to have been very little change for the better. Ophthalmia neonatorum still claims its 10 per cent., but the returns only take us down to 1914, when notification first became compulsory. It was suggested by an eminent authority in his evidence on this point that the disease had been practically stamped out in lying-in hospitals, but possibly this rosy view will not bear very close investigation. It is hard to believe that even the greatest care, and the adoption of every precaution, will suffice to stamp out this disease, which will annually claim a percentage of victims even at lying-in hospitals. It is to be hoped when returns are available that notification will have proved to have been of some benefit, but the value of notification must necessarily depend upon its reaction with regard to the practical treatment of the disease, and of that we have so far no record.

Attention is called to the Report of the Royal Commission on Venereal Diseases, which came to the conclusion that over 50 per cent. of all cases of blindness was due to venereal diseases. That is undoubtedly a statement which every expert in this country will endorse. It is a very serious state of things and will continue to be so in spite of all the new and successful treatment of syphilis until the country has made up its mind to treat the question of syphilis itself in some saner and more practical manner than seems at present likely.

Occupational blindness—i.e., resulting from injuries received in the course of various trades—should, the Report says, receive more energetic treatment of a preventive nature. As a matter of proved fact, no force on earth short of compulsion by Act of Parliament will make the British workman adopt an attitude of common-sense in this matter and wear protecting goggles at his work. The Report rightly suggests obligation, but does not mention who is to enforce it.

The greater part of the remainder of the Report, until we reach the general conclusions and summary, is devoted to the practical solution of the questions appertaining to the welfare of the blind, and deals therefore with education in its various aspects of elementary, professional and industrial, workshops, and miscellaneous organisations. It will be best to follow the Report over these various points by the consideration of the conclusions which follow them. These form 12 most admirable pages containing a great deal of original thought, and though some of the conclusions are controversial and unlikely to be adopted as they stand, still they tend to flood the problem of the welfare of the blind with new light, and this undoubtedly will lead to great things in the near future.

Central Control.

It is noteworthy that the first three paragraphs of these conclusions tread on altogether new ground. Placed before the consideration of any one question of education or training, and obviously put in this position in order to make them assume a capital importance, the committee recommend and have drawn up in these paragraphs a scheme of central control. Let us see what this means in the words of the Report:—

"We have come clearly to the conclusion that the condition of the blind in the United Kingdom calls for the more active intervention of the State to secure (*a*) central control, organisation, and assistance for the existing agencies of voluntary help, which could be utilised with far greater effect if centrally directed, and (*b*) additional assistance for the blind."

Following this preamble comes the outline of the scheme. Shortly it proposes the setting up of a special department known as the "Central Authority in the Ministry of Health," when and if such a Ministry be created, and in the meantime in the Local Government Board, its functions to be the general care and supervision of the blind. The work would necessarily involve a large financial outlay, partly to meet the expenses involved in starting the recommendations which the committee favour later on (initial capital expenditure) and partly to provide for upkeep (annual expenditure). Much of the money required would probably be, as regards the former item, met by special grants from the votes of the Education Department. The committee are of opinion that the most urgent and expensive essential in this respect is the provision of more workshop accommodation. It calculates that about 3000 such shops at a cost of £100–£175 each are needed, involving an outside expenditure of about £500,000. The annual expenditure, it is explained, is extremely difficult to estimate. It would be concerned in respect of grants to institutions and organisations for the blind, pensions, and any other purposes which might arise from time to time. It is considered that it would probably be covered by £250,000 per annum. Passing on to the constitution of this proposed central authority the committee are of opinion that it should be carried out under the guidance of a strong advisory committee of persons associated with the care of the blind, the chairman of the advisory committee to be the Parliamentary secretary of the office in which the new department is established. All matters of policy should be referred to this committee, whilst all executive functions should be exercised by the department working in accordance with the recommendations of the advisory committee.

Such, briefly, is the scheme—a really big scheme, and undoubtedly the right one, and far ahead of anything that has hitherto been projected. There can be no possible doubt that if the question of the welfare of the blind is to be seriously tackled with a view to permanent and progressive improvement coördination of effort is essential. Coördination of effort can only be obtained by centralisation of effort, and centralisation further means economy of effort. It is the only means of stopping or limiting overlapping of work and extravagance in finance. The desirability of a central authority or board is therefore beyond question. The practical application of the scheme is obviously controversial, as, for instance, the recommendations as to finance, which are pious suggestions based on the theory that the wider you open your mouth the more you will get. However that may be, there is little doubt that if the principle of a central authority is adopted the money will be forthcoming from

omewhere. The intrusion of a Government official as he nominal head of such a board may be inevitable hough it seems unfortunate. It is not to be expected hat he would have any special knowledge, and certainly he interference of the State in the management would not onduce, if past history is to be trusted, to the success of he scheme. The ideal condition would be State-aided but ot State-controlled.

Certain reservations have been appended to the scheme by ome of the members of the committee. One of these, ealing with the financial aspect, favours a system of State ensions, for which there is something to be said, but here are many obvious difficulties. Even supposing that ie greatest supervision is exercised, so that pensions e only granted to those properly qualified, there still an be no guarantee that the money is laid out in a itable way by the recipient; and, further, it is certain at once the pension had been granted it would be exceedgly difficult to take it away, or, in fact, to control it at all, pposing the pensioner should prove himself in the future worthy of help. In another reservation objection is made the Exchequer being regarded as solely responsible for the cessary funds, and a point is made that there are other asses, such as deaf-mutes and the paralysed, for whom ate aid could be demanded with equal force as for the nd. There seems at the present juncture to be no special ason to open a controversy as to ways and means. The ain point is to establish a working basis, and something on e lines suggested by the Report which all the members ve signed will be found to be the right guiding principle action in the future.[1]

Education and Training.

The Report favours residential institutions rather than day ntres for elementary education of young children, together ith the employment of blind teachers whose salaries should on an equality with those of sighted teachers.

These are two most important points. With regard to the t, the reservation made by three members that education residential institutions is not desirable for the majority *young* blind children has much force. Institutional life, pointed out in this reservation, is a poor substitute for me and family life, and it is difficult to understand why a ng blind child should be sent to a boarding-school at an lier age than a sighted child. It would, indeed, have n better if the Report had substituted "older" for oung," or specified some age such as "after ten years of ." The value of blind teachers is a proved fact, and in future it is hoped that the practice of teaching the blind the blind will become as universal as it is practicable. note as to the salary paid to the blind teachers is inspired obvious fairness.

erhaps the most striking recommendation with regard to ientary education is the initiation of an after-care me to enable the authorities to keep in touch with each d after leaving the elementary school until he or she can ransferred to the care of either the secondary education ority or to some recognised organisation for the blind. is excellent.

Professional and Industrial Training: Workshops and Miscellaneous Organisations.

assing on to the training of adults in all its various es, the Report is extremely practical, and this part can ecommended to the careful perusal of all those interested ie subject. The following are of special importance.

) The committee is satisfied that the crux of the problem he blind in the United Kingdom is the inadequacy of tshop accommodation. The evidence is conclusive that present accommodation should be doubled, and even this not be sufficient.

) In addition, inspection and standardisation of produc- must follow with a system of coöperative buying of raw rial and selling of produce.

) Persons who work at home should be visited and ted in the purchase of materials and the marketing of goods.

) Particular attention is called to the employment of l women, who, except in rare cases, are unable to earn hing approaching an adequate wage.

(*e*) There is an urgent need for a central free library for the blind which, acting in coöperation with the home teaching societies and public libraries, would facilitate the circulation and distribution of books available, and minimise the danger of unnecessary duplication in production.

Each one of the above recommendations is both novel and excellent. They all help to show the urgency of a central control authority, without which not one of them is practicable. It is devoutly to be hoped that the institution of such a central driving force will not be shelved, and indeed it is not likely that such will be the case, seeing how the war has aroused the general interest of the nation in those who have suffered from it.

The Report finishes its work with some recommendations with regard to the administration of the Poor-law and pensions and a well-deserved note of confidence and approbation of the steps taken at St. Dunstan's Hostel to ensure the welfare of our blinded soldiers and sailors. Many of the recommendations of the committee with regard to the training of the blind are at the present time in force at St. Dunstan's and are answering well.

Place of Ophthalmology in Medical Education.

Further, before closing I wish to note a reservation signed by Sir Arthur Downes, who once more desires to draw attention to the memorial to the General Medical Council from the Ophthalmological Society of the United Kingdom in 1891, which points out the desirability of a more general knowledge of ophthalmology by the general medical student, it being "notorious that the general body of the profession does not possess a competent knowledge of diseases of the eye."

That opinion, unfortunately, holds as good to-day as in 1891. When will the universities and colleges realise the necessity for a forward move in this respect? This war has shown us many things, and none more clearly than this—viz., the general lack of knowledge of the treatment of eye diseases and injuries. Many eminent experts in this branch of surgery are doing their utmost at this moment, and doing it well, but it is only the bare truth that a certain number of blinded men drift from hospital whose sight might at least have been partially saved if their cases had been understood, or at any rate treated on proper lines. The whole fault lies with the examining boards, the members of whom are admittedly entirely at sea in everything that appertains to ophthalmology, and who, therefore, can hardly be expected to examine students on this subject. The students know this, and, having quite enough to do to deal with the subjects of which the examiners are cognisant, they, or the greater number of them, simply neglect ophthalmology.

NATIONAL INSURANCE ACT.

Treatment of the Invalided Sailor or Soldier.

MEMORANDUM 234/I.C., setting out a scheme for the treatment of sailors and soldiers discharged as no longer physically fit for war service, was briefly summarised in THE LANCET of Sept. 8th, p. 404. The Memorandum was marked by the Insurance Commissioners who compiled it as being "For Issue to Doctors," and since its appearance it has received careful attention at the hands of those members and sections of the medical profession likely to be most affected by it. Its reception has not been favourable. The medical practitioners who serve on the panels and who, for the most part, have done so ever since the first National Insurance Act came into force, are not only interested in the matter to a greater extent than their non-panel colleagues, but having been constantly in touch with the practical aspects of the Insurance Acts are, to speak generally, in the position of expert critics.

The criticisms levelled at the Commissioners' scheme are, in the first place, directed against the principle and details of the financial arrangements proposed, the main contention being, to quote from a resolution of the Gloucestershire Panel Committee, that "while the machinery of the Insurance Act may conveniently be employed, the expense should be met by a Treasury grant, and should in no way fall upon Insurance funds." To what extent the proposals of the Commissioners involve drawing upon Insurance funds for the provision of medical benefit for uninsured sailors

[1] On Wednesday last, since this article was written, the Prime Minister has stated that the recommendations of the Departmental Committee will be favourably considered by the War Cabinet.

and soldiers is not quite clear. Correspondence which has passed between the Gloucestershire Local Medical and Panel Committee and the Commissioners shows that in the opinion of the latter the former body had misconstrued the intention of the Commissioners, and had not understood the source from which credits in respect of discharged sailors and soldiers are to be added to the central pool. The correspondence, however, does not state definitely that no money contributed by insured persons for the purpose of providing medical benefit under the Insurance Acts will be diverted towards medical benefit for uninsured sailors and soldiers. And whether the discharged sailor or soldier has been insured or not the obtaining for him medical benefit in respect of injury or disease due to military service was not, it may reasonably be said, contemplated when the Act was passed, and was not provided for in it. Objection is further taken by many to the institution of a system of payment per attendance in the place of a capitation system to be based upon a reasonable estimate of the services to be rendered.

A second criticism of the payments per attendance proposed is that they are inadequate, and must take into account present and probable future conditions of high prices. A further point at issue is the inclusion of non-panel practitioners in the scheme in order that they may attend discharged sailors and soldiers only. In any case they would benefit by the machinery of an insurance system with which they have refused before to have anything to do, and if any part of the moneys paid to them were derived from Insurance funds, it is contended, they would be receiving money contributed by insured persons and their employers and diverted from the remuneration of practitioners on the panel. Memorandum 234/I C., in dealing with the projected inclusion of non-panel practitioners, states that it is being brought about "at the request of the medical profession," but the panel committees complain that they have never been consulted at all before the new system was instituted. This being the case, the practitioners who have worked, and are working, the Insurance Acts, have not had any voice as a body in an expression of opinion ascribed to the "medical profession." It is a point which intimately concerns them, and upon which, and upon the introduction of payment per attendance, they can justly claim that they were entitled to be heard. It is to be regretted that such a matter as the medical attendance of those who have suffered so much for their country should give rise to any controversy, but at the same time it is better that an understanding on the subject should be arrived at, so far as it is possible, at the outset. It is highly undesirable that a new system should be initiated without the best possible prospect of smooth working.

Insurance Practice in Scottish Rural Areas.

A report on medical benefit in Scotland has been prepared at the request of the Scottish Association of Insurance Committees, by Mr. W. M. Marshall, its secretary, and issued as a pamphlet of 48 pages (Motherwell, K. Cameron and Co.) A section of this report is devoted to the country doctor in Scotland and his difficulties.

We may reproduce some passages from the letter of a rural practitioner:—

"So long as the medical man is paid per capita the rural practitioner is very seriously handicapped. In a town or village practice eight or ten visits at patients' homes can be overtaken in an hour. In the country a whole hour may be consumed in visiting a single case. The question of roads has to be considered. Isolated cottages at considerable distances from the main roads are common, and it is often necessary to leave one's trap or car in the main road, even in the summer time, and accomplish the object on foot. In winter, often for weeks at a time, the main roads are impassable through snow-drifts, and to reach a patient many miles have to be covered on foot. ..... The dangers to be faced, the difficulties to be overcome, and the time lost have all to be considered in estimating the special disadvantages of rural practice. Add to that the meagre and often uncertain financial return, and you will get some idea of the lot of the country doctor."

It is generally assumed, the report comments, that the remuneration of the country doctor for each member on his list is higher than that received by his town colleague in respect that he has fewer services to render and is more rarely called upon for treatment, but it is now certain that the visits by the country doctor are not less in proportion to his list than those made by the town or industrial doctor. An examination is appended of the medical records furnished by 15 practitioners in Lanarkshire, three of whom were in practice in rural, two in mixed rural and industrial, and ten in industrial areas. In the rural doctors' list 69 per cent. were male insured persons and 31 per cent. female, as against 79 per cent. male and 21 per cent. female in the industrial areas. In regard to actual services rendered by the country doctor as compared with his industrial colleague, in the case of the first it stands at 4·07 (visits and consultations combined) for each person on his list, as compared with 4·37 for each person on the list of the industrial doctor. But the average visits paid work out at 2·85 for every person on the list of the country doctor, and only 1·71 in the case of the industrial doctor. The report admits that the evidence gleaned from these few practices is insufficient to justify definite conclusions, but the figures as a whole confirm the view that in justice to the country doctor some readjustment of the terms of service is necessary. The figures for Lanarkshire are, indeed, much more favourable to the position of the industrial doctor than the figures for Scotland as a whole. If special consideration is not given to these matters there may be increasing difficulty in securing the services of capable and energetic men for the country districts.

Obituary.

JOHN GORDON SHARP, M.D. EDIN.

Dr. J. G. Sharp died suddenly from cerebral haemorrhage on Oct. 16th, at his residence, 9, Cavendish-road, Leeds, aged 55 years.

John Gordon Sharp received his medical education at Edinburgh University, where he obtained the Milner Fothergill Gold Medal in Therapeutics; at Owens College, Manchester, where he was research student in pharmacology, and at Paris and Berlin. In 1891 he graduated M.B., C.M., at the University of Edinburgh, and five years later took the M.D. degree, for which he was commended. About this time—namely, some 22 years ago—he bought a practice in the Woodhouse and Meanwood Districts, Leeds, and took an active interest in the medical needs of the community in which he had settled. He was honorary surgeon to Beckett Home for Waifs and Strays, and prominently associated himself in the establishment of the Southern Dispensary in Hunslet-road, which was afterwards amalgamated with the Public Dispensary in North-street. He was one of the first medical officers, and continued to work up to the time the branch was closed owing to the difficulty of getting residents during the war. Dr. Sharp, who was a prominent pharmacologist, was a member and foreign corresponding secretary for the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, and gained in 1910 the Hunterian Medal for an essay on ergot. In October, 1915, he joined the R.A.M.C. as a temporary lieutenant, and did 12 months' service in this country. Relinquishing his commission, he still continued to do war work at Chapeltown-road Barracks and elsewhere until his death. He was a frequent contributor to the *Journal of Anatomy and Physiology*, to the *Transactions of the Therapeutical Society*, to the *Pharmaceutical Journal*, the *British Medical Journal*, and THE LANCET, his contributions to our own columns including an interesting paper on Intralaryngeal Therapeutics. Dr. Sharp leaves a widow and two daughters.

DR. J. RAMBOUSEK,

PROFESSOR OF FACTORY HYGIENE, AND CHIEF STATE HEALTH OFFICER, PRAGUE.

WE regret to announce the death, at the age of 63, of Dr. Rambousek. He was recognised as one of the leading writers and workers on factory hygiene on the Continent, and it was noteworthy how ably he seemed to combine the duties of professor, inspector, and laboratory worker. His industry in collecting material for anything about which he wrote was remarkable. He was best known by his book "Gewerbliche Vergiftungen," which was translated into English and published by Edward Arnold in 1913 under the title of "Industrial Poisoning: From Fumes, Gases, etc., Poisons of Manufacturing Processes." In 1911 he made a short visit to England, which he much enjoyed, leaving behind him the impression of a delightful personality

Correspondence.

"Audi alteram partem."

JCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In your leading article of Oct. 20th on the above)ject a curious mistake occurs in the citation of the Edin-gh Dispensary Scheme as if it represented a special thod of *treatment*. Coupling it with two other thera-itic procedures, the writer of the article goes on to say t "the hopes raised by these have died down." The erence is apparently to what has been called the Tuberculin pensary, with its restricted therapeutic outlook, and not the Edinburgh Tuberculosis Scheme, for later on the icle proceeds:—

'he work of the Tuberculosis Dispensaries of our great es and such an organised system of control as that under direction of the Chair of Tuberculosis at Edinburgh are the right lines.

'he purposes and scope of the Edinburgh Scheme are too iliar to call for detailed re-statement now. The erection the Edinburgh Tuberculosis Dispensary in 1887 was a ematised attempt to utilise the discovery of the tubercle illus in the interest of public health. Its purpose was reate a central institution which would deal with the ring aspects of tuberculosis. The lines of its operations, gradual development as the centre of a communal anisation against tuberculosis, and its several extensions the sanatorium, the hospital, the tuberculosis school, the n colony, the care committee, &c., are well known. They e been detailed in successive papers since the foundation the dispensary onwards. The principles and methods e endorsed by the Local Government Board for Scotland,[1] subsequently by the Departmental Committee on erculosis.[2]

, as you say, "a vast social organisation to deal with rculosis has been set in movement," is it wise or just to that "gloom has fallen on the treatment of tuber-sis"? True, for the moment, the large movement—so many other social activities—is held up through the

Before the crash came, Local Authorities, Insurance mittees, &c., throughout the country were beginning ollect and put together the component elements of a factory machinery. In some places the machine was st ready; in others, parts were missing; in few places in any—was it quite complete. When war was declared, gs were immediately stopped, and tuberculosis officers, had been appointed to drive the machine, were called r by the exigencies of the moment for service with the s. The Local Government Boards have done something eep men at the tuberculosis posts, but the major ssity has known no law. The fact must not be lost of, however, that the foundations of an efficient anti-rculosis scheme have been laid. A good deal of the rstructure exists, and, in numerous centres, work is being aken. The 12 per cent. increase in mortality from rculosis for 1915–16 does not seem to have occurred rmly throughout the kingdom, and a good deal might id in explanation of the increase.

remarkable significance in judging of the value of anti-rculosis effort is the striking difference between the ence of tuberculosis among the British troops and its ence among the French troops. Where we calculate in sands, our gallant Allies have unhappily to reckon in tens ousands. At the present moment the medical service in ce is at its wits' end to adapt measures equal to the ant needs with which they have to cope through the ges of tuberculosis. In attempting to determine why extraordinary difference in the effects of war should nt itself in the case of two neighbouring countries with ar civilisation, it would be foolish to lose sight of the rkable difference which existed prior to the war in ct of the coördination of antituberculosis measures. An unprejudiced expert observer, Dr. Hermann Biggs, puts the matter in a nutshell. "In England," he says, "the tuberculosis problem had been efficiently met before the war; in France, on the other hand, practically nothing had been done."

I am, Sir, yours faithfully,

Edinburgh, Oct. 20th, 1917. R. W. PHILIP.

To the Editor of THE LANCET.

SIR,—I have read most carefully the leading article in your issue of Oct. 20th, entitled "Success and Failure in the Treatment of Tuberculosis." The subject is of such importance that it is highly desirable that we should be clear as to what we want to do and how we want to do it. Your leading article, however, seems to me to leave the subject in a very confused condition. You say:—

The keen hopes raised by the open-air methods introduced from Nordrach, by the Edinburgh Dispensary Scheme, by the Frimley graduated exercises, have died down.

And further on in the same paragraph:—

In spite of the vast amount of trouble and administrative machinery we have not kept pace with the disease.

Am I not right in concluding that you think all these methods are failures? And yet towards the end of the article you say:

The mechanism of tuberculosis control is good and only requires to be properly applied. The work of the tuberculosis dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines.

How can we reconcile these varying statements? Has not the Edinburgh scheme been under the personal control of the new professor since its inception? How can it be on the right lines and yet be a failure? Surely this and the other methods must be on the wrong lines.

You seem to think the failure is due to the patient not applying for treatment until the disease is fully established. My experience is that most cases do seek advice early, and are given cough bottles, being assured that they have not got tuberculosis if tubercle bacilli are not found in their sputum. You blame the patient for refusing to go to a sanatorium when it has just been stated that the sanatorium method is a failure. You state that the practitioner cannot devote enough time to make an early diagnosis. What methods do you want the doctor to use? Physical signs such as light percussion or auscultatory signs? Do you think these are reliable methods in the stage it is desirable to make the diagnosis? Are X rays available and always reliable in this earliest stage? If not, what method is the practitioner to rely on? The only reliable method—viz., the subcutaneous inoculation of a sound tubercle antigen—is only exceptionally employed.

I quite agree with you when you say that

No serious progress can be made without close co-operation between these three essential links in the chain of administrative control—the patient, his doctor, and the tuberculosis officer.

But I cannot understand the line of thought in the succeeding sentence—

In certain places where the coöperation has been complete the success of dispensary treatment has been such that undue emphasis has been laid on such minor adjuvants as the administration of certain remedies.

If the treatment has been successful where these remedies are used, and unsuccessful or less successful where they have not been used, what is one to conclude? Surely that the remedies are what has made all the difference. In the last sentence you hope for complete success in the stamping out of the disease on return to normal conditions after the war, the greater coöperation with the general practitioner, and the more complete training of the tuberculosis officer. Training in what methods? In the methods that have produced such a complete failure?

Let me turn now to your attitude towards those who, having realised that the at present practised methods of prophylaxis are futile, wish to try other methods. You say:—

The contrast is so vivid between apparent administrative failure in regard to tuberculosis and the dramatic success achieved in stamping out enteric fever by means of prophylactic measures that increasing pressure is being brought to

de Circular on "The Administrative Control of Pulmonary sis," March 10th, 1906.

[2] Vide Interim Report, 1912, and Final Report, 1913.

bear on authorities to treat tuberculosis as a contagious disease and the sufferer from tuberculosis as a social pariah to be isolated from his fellows.

I would ask if the entericas have been stamped out by isolation of victims of the disease or by preventing their development by prophylactic inoculation? And why is this prophylactic inoculation done in armies and in individuals who are going to countries where the disease is rife? Surely because they are nearly certain to get infected, just as we all know, and you point out, the person who does not get infected with tuberculosis in these countries is the exception. Why, then, object to trying methods in tuberculosis which have been so very successful in typhoid? Surely there is a reasonable hope of success.

I am, Sir, yours faithfully,

W. M. CROFTON.

Laboratory of Special Pathology, University College, Dublin, Oct. 22nd, 1917.

*** Sir Arthur Newsholme's report shows that the war has given tuberculosis a good start while handicapping our measures for dealing with it. This looks like failure, and many people, Dr. Crofton among them, have taken it as such. Sir Robert Philip blames us for giving publicity to this wide sense of discouragement because, as he says, the foundations of an efficient anti-tuberculosis scheme have been well and truly laid. But it was precisely the object of our article to point this out in the face of the evidence to the contrary. Our critics do not make any points against us that lead us to alter a single expressed view, though they differ from each other considerably.—ED. L.

WAR DEAFNESSES.

To the Editor of THE LANCET.

SIR,—With regard to the article on hysterical deafness in soldiers in THE LANCET of Oct. 6th, your leading article (Oct. 13th), and the letter by Major A. F. Hurst and Captain E. A. Peters (Oct. 20th) may I be permitted the following remarks. The first case recorded by the above-named authors was so obviously hysterical that it requires no further notice. The second case, while not so obvious, certainly on the face of it suggests either hysteria or malingering, because complete deafness occurred under circumstances with which we are not accustomed to associate this phenomenon. It would not, therefore, appear that either of the cases presented much difficulty. The observation, however, that in both loud noises failed to waken the patients is interesting.

When the authors say "we have found it necessary to discard almost all the criteria formerly used in the diagnosis of organic deafness from deafness due to hysteria or malingering" we are entitled to expect something very original, if not epoch-making. They must be aware that cases of true hysterical deafness are so rare that a careful record of 200 cases would be expected to give data which might well come under the latter classification. Let us hope that they will not long delay the production of their records.

With regard to their views as to the importance of vestibular reactions in diagnosis the following objections occur to me: 1. Vestibular reactions are present, if perhaps somewhat delayed, in cases of "noise deafness" (sometimes called boilermakers' deafness). 2. In cases of concussion deafness due to artillery vestibular reactions are retained. It is inconceivable that the authors desire to deny the occurrence of almost complete organic deafness from such causes. This brings me to another point. They state that in the deafness resulting from cerebro-spinal meningitis if there be complete deafness part of it is hysterical. The actual fact is that sufficient organic deafness is frequently left to make the sufferer, if a child, a deaf-mute. The question, then, of a little more or a little less must be of more academic than practical interest. Finally, on what grounds do Major Hurst and Captain Peters make the following statement, "But it must be remembered that in partial organic deafness the vestibular reactions are lost in the severer cases and exaggerated in the slighter cases"? My own view is that hysterical deafness may be suspected in cases in which the history indicates a chain of circumstances which the experienced observer is not inclined to consider sufficient to account for the great amount of deafness. For the rest these cases conform to the type we are accustomed to meet with in lesions of the sound-perceiving apparatus. In general the diagnosis can only be made with certainty after recovery, which is sudden. Unless further proof is forthcoming, I shall be disinclined to attach supreme importance to the presence of vestibular reactions as an aid to diagnosis of hysterical deafness.

I am, Sir, yours faithfully,

Edinburgh, Oct. 21st, 1917. P. MCBRIDE.

DIATHERMY.

To the Editor of THE LANCET.

SIR,—I was much interested in reading in THE LANCET of Oct. 20th Dr. L. W. Bathurst's account of the successes he has recently obtained from the use of indirect diathermic fulguration, a method which I originally described in a paper I read before the Electro-Therapeutic Section of the Royal Society of Medicine on Feb. 18th, 1916, and which appeared in the Proceedings of that Society, March, 1916, and also in the *Journal de Radiologie et d'Électrologie*, July, 1916.

Since I last explained the details of the method to Dr. Bathurst I have considerably modified its technique. I find that by far the best fulgurating instrument for general use is a Primus Pricker, an instrument sold at any ironmongers in 3*d*. packets for cleaning the nipples of the well-known Primus petroleum stoves. In some cases, such as when treating the hands, or when treating children, or when operating under an anæsthetic, I bandage a 20 x 10 cm. electrode on the thigh, arm, or abdomen of the patient instead of using the hand electrodes. It is not essential to use the somewhat expensive and cumbersome autocondensation couch. A very simple and efficient substitute can be cheaply made by taking a three-ply board the size of the consulting-room couch or the size of the seat of a large chair, placing on this board a piece of zinc about 6 inches smaller in length and breadth, and fixing over this zinc a piece of vulcanite one-eighth of an inch thick and overlapping the zinc for 2 inches all round. The board is drilled and a terminal attached to the zinc. The insulating properties of the board are much increased by soaking it in melted paraffin wax. I have entirely abandoned the use of the ebonite rod, the use of which I formerly recommended to Dr. Bathurst, as I find that a small thin cushion, or even a folded blanket, is quite sufficient insulation and far more convenient to use. A rubber glove on the left hand forms, perhaps, the best support, and is very useful in eye cases for separating the lids.

Indirect diathermic fulguration has a much wider range of usefulness than the cosmetic purposes of which Dr. Bathurst writes. I have obtained very satisfactory and quick results in the fulguration of the nodules of lupus, in the treatment of rodent ulcer, chronic pharyngitis, epulis, epithelioma of the cheek, and many other conditions where the destruction of small superficial structures or growths is required. The accuracy of the application, and the ease and certainty with which its depth of action can be regulated, make it very useful in the treatment of certain conditions of the eye and eyelids. I have recently been treating by this means, apparently with success, an old-standing case of granular conjunctivitis, and also a growth, probably malignant, of the cornea. In the hands of a throat specialist this treatment would, I feel sure, be very useful for the destruction of laryngeal growths. This method of fulguration is in almost daily use at the Radcliffe Infirmary, Oxford, where its mode of application can be seen any morning by appointment.

I am, Sir, yours faithfully,

Oxford, Oct. 21st, 1917. W. J. TURRELL.

THE TREATMENT OF ENURESIS.

To the Editor of THE LANCET.

SIR,—Enuresis is a diagnosis which includes so many causative conditions that I think it would be advisable if Mr. A. R. Thompson, whose letter on this subject appeared in your issue of Oct. 20th, would describe the class of case for which treatment by gradual dilatation of the bladder is suitable. I am somewhat surprised that he and his acquaintances are not familiar with this method. In my book on "The Diseases of Children," 1910 (p. 566), I refer to it as appropriate for intractable cases after puberty, as in girls constant enuresis may lead to the bladder becoming unduly small. Possibly it may be a justifiable measure at an earlier age, in spite of the objections appertaining thereto. And it must be remembered that many and various methods prove curative, probably through the psychical effect. Mere change of surroundings, such as admission to a hospital

ard, is sometimes sufficient to break the habit. The method also mentioned by Dr. Leonard Guthrie in discussing nctional diseases of the nervous system ' as suitable for veterate cases of irritable contracted bladder. Admitting at the treatment may be advantageous in some cases, I ink it should be clearly stated that it is not necessary or lvisable for the majority, and that it must not be nployed indiscriminately. It is only appropriate for certain ses which ought to be defined.

I am, Sir, yours faithfully,

Park-street, W., Oct. 22nd, 1917. EDMUND CAUTLEY.

To the Editor of THE LANCET.

SIR,—The treatment of enuresis by gradual dilatation of e bladder is not new. I carried out the treatment in a very d case in a girl 14 years of age, acting upon the advice Mr. (now Lieutenant-Colonel) E. Tenison Collins, in 1903. ur ounces was all the girl could take at first; this was dually increased to 12 ounces, and at the end of a tnight treatment was stopped. There has been no apse. I am, Sir, yours faithfully,

enarth, Oct. 20th, 1917. G. P. JAMES.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

IR,—Dr. J. F. Gemmel in his letter in your issue of . 20th objects to "Service patients" on two grounds. st, because they are "certified"; and secondly, that, ig in a public asylum, they have the "taint and stigma" pauperism. My experience of the social class from which majority of sailors and soldiers come is that they do not ect to certification (a procedure they know little about) so h as to being sent to an asylum. The large military lums which are suggested would suffer from the same igma" as the county asylum. Secondly, there are many ate patients in public asylums, and they do not suffer n the stigma of pauperism. The "Service" patients are ate patients.

r. Gemmel has, however, put his finger on the weak t of his own plan. One of the greatest pleasures the ne have is to receive visits from their relatives, and to ive them of the possibility of such a privilege would be nright cruelty. It is all very well to write of hardships eing unavoidable in war, but surely the whole aim of Dr. mel's letter is to remove hardships, and so far as I can t merely replaces imaginary ones by a very real one. To nind the Ministry of Pensions and the Board of Control grappled with a difficult problem in a most satisfactory ner. I am, Sir, yours faithfully,

y of London Mental Hospital, near Dartford, Kent, Oct. 20th, 1917. R. H. STEEN.

E CONTINUOUS ADMINISTRATION OF ASPIRIN.

To the Editor of THE LANCET.

R,—The following case will perhaps help your correndent, "J. O. H.":—

H., a lady, aged 30, recently consulted me on account of us sensations in her head, the chief of which was that n she entered a room she always saw a large box over h she had to step before being able to get to the other The history was that she had suffered from headache long time, for the relief of which she had taken aspirin y. She was in a very nervous state, very active, and us to do her duty. Thorough examination failed to se any actual disease, but the ophthalmoscope revealed of refraction. I sent the patient to an ophthalmic on, who reported the presence of hypermetropic matism, and prescribed glasses. She was ordered to ntinue the use of the drug. From that time the patient ll her headache and other symptoms.

ave no doubt that the reckless way in which aspirin quently prescribed would account for some obscure us conditions. Sisters and nurses in nursing s are much given to doping patients with aspirin ly on their own account, a practice which cannot strongly deprecated.

I am, Sir, yours faithfully,

ey-street, W., Oct. 17th, 1917. CHARLES W. CHAPMAN.

eases of Children. Edited by Dr. A. E. Garrod, Dr. F. E. Batten, J. H. Thursfield, 1913.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. R. H. Spittal, R.A.M.C., attached Lancashire Fusiliers, qualified at Aberdeen University, where he held the appointment of junior demonstrator of anatomy in 1905, and was in practice at South Bank, Yorks, before joining the R.A.M.C.

Lieut. D. S. E. Milligan, R.A.M.C., attached Worcester Regiment, was a student at St. Thomas's Hospital, London, where he held the appointment of casualty officer, and qualified in the early part of 1915.

Lieut. R. G. Hill, M.C., R.A.M.C., attached Coldstream Guards, received his medical education at St. Bartholomew's Hospital, London, where he was at one time senior house physician, and qualified in 1911. He also held an appointment at the Great Northern Central Hospital, and was a surgeon at the British Red Crescent Hospital during the Turco-Italian War of 1912. At the outbreak of the great war he obtained a combatant commission in the Royal Field Artillery, and served in France and in Egypt, and later was given a commission in the R.A.M.C. The award of the M.C. was recorded in THE LANCET of Oct. 6th, 1917, p. 550.

Capt. E. T. Gaunt, R.A.M.C., qualified at Birmingham in 1908, and held appointments at the General Hospital and at the Queen's Hospital, Birmingham.

Capt. G. S. Elliott, Australian A.M.C.

Capt. F. C. Davies, R.A.M.C., attached Northumberland Fusiliers, was educated at Cambridge and at Charing Cross Hospital, London, and qualified in 1908. He held appointments at Charing Cross, at West Ham Isolation, and at Great Ormond-street Hospitals, and was medical adviser to Cambridge Insurance Committee, and county tuberculosis officer at the time of joining the R.A.M.C.

Capt. A. M. Fisher, R.A.M.C.

Died of Wounds.

Capt. G. A. MacFarland, R.A.M.C., was educated at Belfast, Dublin, and Edinburgh, and qualified at the latter place in 1903. He was at one time assistant medical officer at Hackney Union Infirmary, and later practised in Belfast.

Lieut.-Col. A. W. F. Sayres, R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified in 1890. He had held appointments at St. Thomas's and at the Bethlem Royal Hospital, London, and also at the South Devon and East Cornwall Hospital, Plymouth. He was attached to the R.A.M.C. (T.F.) prior to the outbreak of war, and was in practice at Hartley, Plymouth, where he was tuberculosis officer to the Stonehouse District of the Devonshire County Council.

Capt. R. Sherman, R.A.M.C., was a student at St. Bartholomew's Hospital, and qualified in 1912. He held a house appointment at St. Bartholomew's, and joined the R.A.M.C. in December, 1914. Shortly afterwards he went to France, and was present at the battles at Loos and on the Somme.

Capt. (temp. Lieut.-Col.) H. Gibson, R.A.M.C., received his medical education at the London Hospital, and qualified in 1907, and shortly afterwards joined the R.A.M.C.

Died.

Capt. R. Sterling, R.A.M.C., qualified at Durham in 1892, after taking holy orders in 1884. He was for many years a C.M.S. missionary in Palestine, and was an honorary canon of St. George's Collegiate Church, Jerusalem.

Major H. E. Dalby, R.A.M.C., was a student at Charing Cross Hospital, and qualified in 1899. He was in practice at Torquay before going on active service, and died at Basra, Mesopotamia, where he was in command of H.M. Hospital Ship, *Assaye*.

Wounded.

Capt. H. L. Flint, R.A.M.C., attached East Lancs Regiment.
Capt. J. H. Morris-Jones, R.A.M.C., attached Worcester Regt
Major W. E. Crowther, Australian A.M.C.
Capt. A. Nelson, New Zealand A.M.C.
Capt. D. A. R. Haddon, R.A.M.C., attached Royal Scots.
Capt. M. R. Finlayson, Australian A.M.C.
Capt. E. H. Griffin, M.C., R.A.M.C., attached Northumberland Fusiliers.
Capt. J. Tate, R.A.M.C., attached Royal Field Artillery.
Capt. W. E. Graham, R.A.M.C.
Capt. W. E. Hallinan, R.A.M.C., attached Royal Warwickshire Regiment.
Capt. R. F. Walker, R.A.M.C., attached Coldstream Guards.
Capt. G. T. Baker, R.A.M.C.
Lieut.-Col. P. J. Hanafin, D.S.O., R.A.M.C.

Capt. G. Crawshaw, R.A.M.C., attached East Lancs Regt.
Capt. H. Foxton, R.A.M.C.
Capt. H. A. Higginson, R.A.M.C., attached Lancs Fusiliers.
Capt. F. L. Newton, R.A.M.C., attached East Lancs Regt.
Capt. P. R. Woodhouse, M.C., R.A.M.C., attd. Irish Guards.

Previously reported Missing, now reported Prisoner in German Hands.

Lieut.-Col. G. S. Williamson, R.A.M.C.

THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet announced. All are members of the R.A.M.C. unless otherwise stated. The dates in parentheses, in those cases where bars have been awarded, refer to the number of THE LANCET in which a record of the original decoration will be found :—

Bar to the Military Cross.

Temp. Capt. O. J. Day, M.C. (June 23rd, 1917, p. 969); Temp. Capt. A. Fullerton, M.C. (Jan. 6th, 1917, p. 38); Temp. Capt. N. J. H. Gavin, M.C. (June 9th, 1917, p. 894); Temp. Capt. A. J. R. O'Brien, M.C., African Med. Serv. (Feb. 17th, 1917, p. 279); Temp. Capt. D. J. S. Stephen, M.C. (July 31st, 1915, p. 257).

Military Cross.

Capt. J. Alston (Spec. Res.); Capt. R. R. G. Atkins (Spec. Res.); Temp. Capt. P. B. Belanger; Capt. T. H. Bell, Canadian A.M.C.; Capt. W. S. Birch (Spec. Res.); Temp. Capt. A. G. Bisset; Capt. A. Bloom; Temp. Capt. O. V. Burrows; Temp. Capt. C. K. Carroll; Capt. J. P. S. Cathcart, Canadian A.M.C.; Temp. Capt. J. P. Charles; Temp. Capt. A. T. Cunningham; Temp. Capt. L. M. Dawson; Temp. Capt. H. J. de Brent; Temp. Capt. C. K. G. Dick; Temp. Capt. J. Dickson; Capt. F. F. Dunham, Canadian A.M.C.; Lieut. L. du Vergé; Temp. Capt. H. H. Elliot; Temp. Capt. H. V. Forster; Temp. Capt. C. W. Fowler; Temp. Capt. J. H. C. Gatchell; Temp. Lieut. J. A. C. Greene; Capt. D. A. R. Haddon; Capt. J. L. Hamilton; Temp. Capt. D. C. Hanson; Temp. Capt. A. R. Jackson; Capt. C. L. Lander; Capt. H. D. Lane; Capt. P. MacCallum (Spec. Res.); Temp. Capt. D. J. Macdougall; Capt. A. E. P. McConnell; Capt. E. A. McCusker, Canadian A.M.C.; Temp. Capt. D. C. M. Page; Capt. A. A. Parker, Canadian A.M.C.; Capt. W. B. Postlewaite (Spec. Res.); Capt. J. W. G. H. Riddel; Capt. S. G. Ross, Canadian A.M.C.; Temp. Capt. W. Russell; Capt. J. B. Scott (Spec. Res.); Capt. W. H. Scott, Canadian A.M.C.; Temp. Capt. E. S. Sowerby; Temp. Capt. W. Turner; Lieut. S. Vidot (Spec. Res.); Temp. Capt. J. A. Vlasto; Capt. J. W. Woodley, Canadian A.M.C.

OBITUARY OF THE WAR.

ALFRED CECIL EDWARDS, M.B., CH.B. LIVERP.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. C. Edwards, who died from the effects of shell-gas in hospital in France on July 25th, at the age of 37 years, was second son of the late Canon Edwards, of Bingley. He was educated at the Bradford Grammar School and at Queen Elizabeth's School, Kirkby Lonsdale, taking his medical course at Liverpool University, and graduating in 1908. After filling resident posts at the Northern Hospital and the South Dispensary in Liverpool, he entered the Colonial Medical Service. Receiving a commission in the R.A.M.C. early in 1915, he went to France in May of the same year as regimental medical officer, and remained at the front until his death.



He was wounded and gassed in December, 1915, being awarded the Military Cross. His colonel writes of Captain Edwards as a most efficient regimental medical officer.

CHARLES WELLER, M.R.C.S. ENG., L.D.S.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain C. Weller, who was killed on active service on August 16th, at the age of about 35 years, was second son of Charles Weller, of Redhill. He was educated in France and took his dental course at Guy's Hospital, qualifying L.D.S. in 1905 and M.R.C.S. five years later. He then entered into partnership in a dental practice in London, which he gave up to join the Expeditionary Force in October, 1914, serving at the clearing hospital at Bethune, and later at Choate. He was then attached to a field ambulance in connexion with the 1st Cavalry Division, and on expiration of his second year, having signed on for the remainder of the war, he was at a base hospital until recently relieved by an American unit. At the time of his death he was medical officer to a London regiment. News was received at the regimental aid-post saying that some officers were buried inside a building which had been shelled. On his way to render assistance he received a severe wound in the temple, which he only survived for a few minutes.



Captain Weller was an excellent French scholar, and was also well known in the hunting field.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Private H. S. Edwards, Middlesex Regiment, killed in action, eldest son of Dr. A. S. Edwards, of Halling, Kent.
Capt. R. S. Adams, Royal Field Artillery, killed in action, only son of Dr. R. G. W. Adams, of Wellington, New Zealand.
Major H. E. Dalby, R.A.M.C., died, son of the late Dr. W. B. Dalby, of Torquay.
Second Lieut. J. M. De Lacey, West Yorkshire Regiment, attached Royal Flying Corps, killed in action, only son of Dr. R. C. De Lacey, of Newcastle-on-Tyne.
Second Lieut. R. C. D. Moore, H.A.C., killed in action, elder son of Capt. R. D. Moore, R.A.M.C., of Churchdown, Gloucester.
Capt. I. Heaton, Royal West Kent Regiment, died of wounds, son of Capt. C. J. Heaton, R.A.M.C., of Westgate-on-Sea.
Second Lieut. T. S. Arnold, East Surrey Regiment, attached Lancashire Fusiliers, died of wounds, elder son of Dr. F. S. Arnold, of Berkhamsted, Herts.
Col. H. G. F. Longhurst, Royal Berkshire Regiment, killed in action, youngest son of Dr. A. E. T. Longhurst, of Chandlersford, Hampshire.
Second Lieut. J. E. Beckingsale, Duke of Cornwall's Light Infantry, killed in action, only son of Dr. D. L. Beckingsale, of Towyn, Merioneth, Wales.
Capt. (temp. Lieut.-Col.) H. Gibson, R.A.M.C., died of wounds, younger son of Surg.-Lieut.-Col. G. J. Gibson, A.M.S. (ret.), of Totnes, Devon.

URBAN VITAL STATISTICS.

(Week ended Oct. 20th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000 000 persons, the annual rate of mortality was 12·0, against 11·1 and 11·8 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·9, or 0·9 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 6·0 in East Ham, 6·3 in Acton and in Carlisle, and 6·8 in Bury, to 18·4 in Exeter, 19·9 in Lincoln, and 20·8 in Stockton-on-Tees. The principal epidemic diseases caused 298 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 178 from infantile diarrhœa, 54 from diphtheria, 33 from measles, 23 from whooping-cough, 8 from scarlet fever, and 2 from enteric fever. The deaths from diarrhœa, which had been 267, 278, and 243 in the three preceding weeks, fell to 178, and included 50 in London, 12 in Liverpool, 11 each in Sheffield and Hull, 10 in Manchester, and 7 in Birmingham. The 1021 cases of scarlet fever and 1314 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 97 and 43 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 118 resulted from violence. The causes of 33 deaths were uncertified, of which 5 were registered in Birmingham, 4 in South Shields, and 3 in Darlington.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2 500,000 persons, the annual rate of mortality was 12·1, against 10·7 and 11 8 per 1000 in the two preceding weeks. The 244 deaths in Glasgow corresponded to an annual rate of 11·4 per 1000, and included 10 from whooping-cough, 9 from infantile diarrhœa, 4 from diphtheria, and 2 from measles. The 104 deaths in Edinburgh were equal to a rate of 16·3 per 1000, and included 5 from infantile diarrhœa, 2 from whooping-cough, and 1 from diphtheria.

Irish Towns.—The 137 deaths in Dublin corresponded to an annual rate of 17·9, or 2·1 per 1000 above that recorded in the previous week, and included 7 from infantile diarrhœa, 2 from measles, and 1 each from enteric fever and whooping-cough. The 99 deaths in Belfast were equal to a rate of 13·1 per 1000, and included 3 from infantile diarrhœa, 2 from measles, and 1 from whooping-cough.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1917.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·2 per 1000 of the population, estimated at 4,237.387 persons; in the three preceding months the rates had been 3·4, 3·5, and 3·1 per 1000 respectively. The lowest rates last month were recorded in Kensington, Hampstead, the City of London, Camberwell, Greenwich, and Woolwich; and the highest rates in Chelsea, Stoke Newington, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The prevalence of scarlet fever showed a marked increase over that recorded in the preceding month; this disease was proportionally most prevalent in Chelsea, Finsbury, Shoreditch, Bethnal Green, Poplar, Bermondsey, Battersea, and Lewisham. The Metropolitan Asylums Hospitals contained 807 scarlet fever patients at the end of last month, against 595, 644, and 707 at the end of the three preceding months; the weekly admissions averaged 138, against 101 and 83 in the two preceding months. Diphtheria also was considerably more prevalent than it had been in the preceding month; the greatest proportional prevalence of this disease was recorded last month in Paddington, St. Marylebone, Stoke Newington, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Deptford. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1042, 1070, and 1003 at the end of the three preceding months, had risen to 1111 at the end of last month; the weekly admissions averaged 168, against 142 and 122 in the two preceding months. The prevalence of enteric fever was appreciably greater in September than in August; the 44 cases notified last month included 6 in Poplar, 7 in Wandsworth, 4 in Lambeth, and 3 in Kensington. There were 46 cases under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 41 and 45 at the end of the two preceding months; the weekly admissions averaged 6 in each of the last two months. Erysipelas was proportionally most prevalent in Paddington, Holborn, Shoreditch, Bethnal Green, and Deptford. The 14 cases of puerperal fever notified during the month included 3 in Fulham, 2 in St. Pancras, and 2 in Stepney. Of the 12 cases of cerebro-spinal meningitis 3 belonged to Wandsworth, 2 to Hackney, and 2 to Camberwell; while of the 7 cases of poliomyelitis 2 belonged to Fulham.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending Sept. 29th, the deaths of 3582 London residents were registered, equal to an annual rate of 11·0 per 1000; in the three preceding months the rates were 12·0, 10·9, and 10·5 per 1000. The rates last month ranged from 6·6 in Woolwich, 7·8 in the City of London, 9·1 in Hampstead, 9 4 in St. Marylebone, 9·6 in the City of Westminster, 9 7 in Camberwell, and 9·9 in Paddington, to 12·9 in Stepney, 13·2 in Chelsea and in Southwark, 13·5 in Finsbury, 14 2 in Shoreditch, and 14·9 in Bermondsey. The 3582 deaths from all causes included 399, which were referred to the principal infectious diseases; of these, 23 resulted from measles, 4 from scarlet fever, 23 from diphtheria, 38 from whooping-cough, 9 from enteric fever, and 302 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded last month in the City of London; among the metropolitan boroughs they caused the lowest death-rates in Kensington, the City of Westminster, Hampstead, Holborn, and Woolwich; and the highest rates in Fulham, Chelsea, Shoreditch, Bermondsey, Deptford, and Greenwich. The 23 deaths from measles were only half the corrected average; of these 23 deaths 7 belonged to Shoreditch, 3 to Stepney, and 2 each to Paddington, Chelsea, and Poplar. The 4 fatal cases of scarlet fever were 9 below the corrected average number, and included 2 in Finsbury and 1 each in Bethnal Green and Camberwell. The 23 deaths from diphtheria were 18 fewer than the corrected average number, and included 4 in Southwark, and 2 each in Paddington, St. Marylebone, Bethnal Green, and Wandsworth. The 38 fatal cases of whooping-cough were 4 below the corrected average, and included 4 in Bermondsey, 4 in Lambeth, and 3 each in Hammersmith, Islington, and Southwark. The 9 deaths from enteric fever were 1 in excess of the corrected average, and included 2 in Hammersmith, 2 in Poplar, and 2 in Wandsworth. The 302 fatal cases of diarrhœa and enteritis among children under 2 years of age were 342 less than the corrected average number; the greatest proportional mortality from this disease last month was recorded in Fulham, Chelsea, Shoreditch, Bermondsey, Deptford, and Greenwich. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 49·7 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1917.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years)	Total.	Annual rate per 1000 persons living.		
LONDON	4,237,387	—	524	627	—	44	—	14	142	12	7	1370	4·2	—	23	4	23	38	9	302	399	1·2	3582	11·0
City Districts :																								
Kingston	130,668	—	6	27	—	—	—	1	7	1	—	42	4·2	—	2	—	2	—	—	7	11	1·1	99	9·9
Kington	152,144	—	10	6	—	3	—	—	6	1	—	26	2·2	—	—	—	—	1	1	1	3	0·3	118	10·1
Hammersmith ...	117,965	—	10	15	—	1	—	—	3	—	1	30	3·3	—	1	—	—	3	2	6	12	1·3	92	10·2
Islington	149,428	—	17	18	—	2	—	3	5	—	2	47	4·1	—	—	—	—	2	—	20	22	1·9	125	10·9
Lambeth	57,298	—	17	8	—	1	—	1	2	—	—	29	6·6	—	2	—	1	—	—	7	10	2·3	58	13·2
City of Westminster	132,853	—	15	14	—	1	—	—	4	—	—	34	3·3	—	—	—	1	—	1	2	4	0·4	98	9·6
Metropolitan Districts :																								
Marylebone ...	98,573	—	6	19	—	1	—	—	2	—	—	28	3·7	—	—	—	2	—	—	5	7	0·9	71	9·4
Hampstead	81,470	—	4	5	—	2	—	—	1	—	—	12	1·9	—	—	—	—	—	—	1	1	0·2	57	9·1
St. Pancras	196,812	—	25	35	—	2	—	2	8	1	—	73	4 8	—	1	—	1	1	—	8	11	0·7	168	11·1
Paddington	309,359	—	38	36	—	2	—	1	11	—	—	88	3·7	—	—	—	1	3	—	20	24	1·0	260	11·0
Stoke Newington...	49,776	—	6	17	—	—	—	—	—	—	—	23	6·0	—	—	—	—	—	—	5	5	1·3	40	10·5
Hackney	209,636	—	29	16	—	—	—	—	10	2	—	57	3·5	—	—	—	—	2	—	12	14	0·9	192	11·9
Central Districts :																								
Finsbury	38,161	—	1	5	—	1	—	—	3	—	—	10	3·4	—	—	—	—	—	—	1	1	0·3	34	11·6
Shoreditch	74,230	—	12	9	—	—	—	1	1	—	—	23	4·0	—	1	2	—	—	—	5	8	1·4	77	13·5
City of London ...	20,113	—	—	2	—	—	—	—	—	—	—	2	1·3	—	—	—	—	—	—	—	—	—	12	7·8
East Districts :																								
Bethnal Green ...	99,932	—	21	23	—	—	—	1	5	—	—	50	6·5	—	7	—	1	2	—	19	29	3·8	109	14·2
Bow and Bromley ...	115,552	—	31	40	—	—	—	—	9	—	—	80	9·0	—	—	1	2	1	—	9	13	1·5	93	10·5
Poplar	258,395	—	34	41	—	2	—	2	11	—	—	90	4·5	—	3	—	1	2	—	21	27	1·4	255	12·9
Stepney	155,095	—	32	19	—	7	—	1	5	—	1	65	5·5	—	2	—	1	2	2	11	18	1·5	143	12·0
South Districts :																								
Battersea	177,166	—	19	74	—	—	—	—	7	—	—	100	7·4	—	—	—	4	3	—	12	19	1·4	180	13·2
Bermondsey	113,661	—	27	38	—	—	—	—	3	—	—	68	7·8	—	—	—	1	4	—	25	30	3·4	130	14·9
Camberwell	283,729	—	24	31	—	4	—	—	8	1	1	69	3·2	—	1	—	1	4	1	16	23	1·1	237	10·9
Deptford	159,402	—	27	17	—	—	—	—	3	1	—	48	3·9	—	1	—	1	—	—	10	12	1·0	138	11·3
Greenwich	310,858	—	45	34	—	7	—	—	2	3	1	92	3·9	—	—	—	2	2	2	21	27	1·1	238	10·0
Lewisham	249,749	—	16	22	—	1	—	—	7	2	1	49	2·6	—	—	1	—	2	—	19	22	1·1	185	9·7
Lambeth	107,696	—	5	20	—	1	—	—	8	—	—	34	4·1	—	1	—	1	2	—	13	17	2·1	100	12·1
Wandsworth	94,452	—	9	9	—	1	—	—	2	—	—	21	2·9	—	1	—	—	—	—	11	12	1·7	78	10·8
Wandsworth	162,901	—	30	13	—	1	—	1	5	—	—	50	4·0	—	—	—	—	1	—	12	13	1·0	129	10·3
Woolwich	130,313	—	8	14	—	2	—	—	4	—	—	28	2·8	—	—	—	—	1	—	3	4	0·4	66	6·6
Outside London ...	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

Surgery.—R. F. Deacon (Section II.), Guy's Hospital; E. A. Leak (Section I.), Cambridge and London Hospital; and I. Liberman (Sections I. and II.), Leeds.

Medicine.—J. L. D. Buxton (Sections I. and II.), University College Hospital: E. F. Deacon (Section II.) and A. Magill (Section I.), Guy's Hospital; J. S. Matthews, London and University College Hospitals; G. L. Mitchell (Sections I. and II.), Glasgow and Birmingham; and J. H. Tighe (Sections I. and II.), Birmingham.

Forensic Medicine.—J. L. D. Buxton, University College Hospital; O. Halstead, Guy's Hospital; J. S. Matthews, London and University College Hospitals; and J. H. Tighe, Birmingham.

Midwifery.—G. H. Fitzgerald and O. Halstead, Guy's Hospital; S. G. Mohamed, Liverpool; S. Robinson, Belfast and St. Thomas's Hospital; G. E. Spero, London Hospital; and T. C. Stephen, Manchester.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: J. L. D. Buxton, E. F. Deacon, I. Liberman, and J. S. Matthews.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the annual meeting of the College on Oct. 18th the following office-bearers were elected for the ensuing year:—President: Robert McKenzie Johnston. Vice-President: James W. B. Hodsdon. Secretary and treasurer: George Mackay. Convener of museum committee: Charles Walker Cathcart. Librarian: Harold Jalland Stiles. President's Council: Francis Mitchell Caird, Sir George Andreas Berry, David Wallace, Henry Alexis Thomson, Harold Jalland Stiles, and Alexander Miles; *ex-officio:* The vice-president, the secretary and treasurer, and the Representative in the General Medical Council. Representative in the General Medical Council: James W. B. Hodsdon.

At a meeting of the College on Oct. 18th the following, having passed the requisite examinations between July 2nd and 4th, were admitted Fellows:—Henry Howard Christie, Wanganui, New Zealand; James Bertram Leather, Birmingham: Richard Parsons, Sandgate; Marion Columbus Pruitt, London; Henry Anthony Rippiner, Bradford; and David Welsh, Amble, Northumberland.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

C. H. A. Shepherd to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Col. F. W. C. Jones, C.B., is placed on retired pay.

TERRITORIAL FORCE.

Major (temp. Lieut.-Col.) C. H. Lindsay, C.M.G., to be Assistant Director of Medical Services, and is granted the temporary rank of Colonel whilst so employed.

Lieut.-Col. H. H. C. Dent to be Assistant Director of Medical Services, and is granted the temporary rank of Colonel whilst so employed.

Capt. (temp. Major) H. J. Dunbar to be Deputy Assistant Director of Medical Services, Welsh Division.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. (temp. Col.) P. MacKessack, D.S.O., relinquishes the rank of temporary Colonel on reposting.

Major (temp. Lieut.-Col.) C. W. Holden, D.S.O., to be an Assistant Director of Medical Services of a Division, and to retain his temporary rank.

Major (acting Lieut.-Col.) W. L. Steele retains his acting rank whilst in command of a General Hospital.

To be acting Lieutenant-Colonels: Major C. H. Carr and Temp. Major E. W. Skinner, whilst in command of a General Hospital; Major F. J. Garland, whilst in command of a Casualty Clearing Station; Capt. W. W. Boyce and Lieut. (temp. Capt.) R. A. Preston, M.C., whilst in command of a Field Ambulance.

Major W. L. Bennett is placed on the half-pay List on account of ill-health.

Major R. E. Humfrey to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

J. C. MacNeillie and E. Slack are granted temporary rank for duty with the South African Native Labour Corps as Major and Captain respectively.

Temp. Capt. B. L. Neiley, Canadian Army Dental Corps, to be temporary Major.

L. F. B. Knuthsen to be temporary Honorary Major whilst serving with No. 5 British Red Cross Hospital.

E. J. Tyrrell, late temporary Captain, to be Honorary Captain.

Temporary Lieutenants to be temporary Captains: A. McP. Warner, H. R. Mayo, W. C. Counell, H. N. Eccles, L. W. Evans, K. D. Attridge, V. D. C. Wakeford, N. W. Rawlings, J. E. Sharp, J. B. Martin, A. A. Henderson, H. L. Cronk, H. M. L. Crawford, H. S. Brown, R. Adam, W. Gemmill, T. E. R. Branch, W. Farquharson, R. H. Thomas, B. O. Kinney, J. Robertson, R. J. Harley-Mason, H. H. Weir, J. Robertson, C. E. O'Keeffe, F. Brickwell, J. C. Livett, H. L. Smith, G. D. Laing, F. M. Bishop, C. Elliott, A. J. Turner.

W. H. F. F. Godwin, late temporary Captain, is granted the honorary rank of Captain.

H. Nockolds to be temporary Honorary Captain whilst in charge of Queen Alexandra's Hospital.

To be temporary Captains: T. M. Creighton, T. M. Savage, S. L. Staples.

A. T. Paterson to be temporary Honorary Lieutenant whilst employed with the St. John Ambulance Brigade Hospital.

T. S. Evans to be temporary Honorary Lieutenant whilst serving with the British Red Cross Hospital, Netley.

P. E. el Howie, late temporary Lieutenant, is granted the honorary rank of Lieutenant.

S. H. Kagan to be temporary Honorary Lieutenant.

Officers relinquishing their commissions: Temp. Lieut.-Col. (Cap. A.M.C.) T. McCrae; Temp. Capts.: E.N. Coutts (on account of ill-health contracted on active service), R. H. Oliver, R. Sterling (on account of ill-health), H. Hebblethwaite, L. S. Kidd, J. S. Findlay, J. K. Morton, H. J. Bell, T. B. Riddall, S. Bryson, G. H. Powell, E. Gordon, E. Seeley, J. F. Bullar, R. S. A. Heathcote, G. D. H. Wallace, C. H. W. Page, J. C. Bawden, R. N. Farrer, J. E. Rees, J. McTurk, J. Kirker, G. W. Lloyd, E. C. MacKay, P. Gettleson, J. Joule, R. P. Nash, W. T. Wearing, A. C. Falkiner, V. M. Fisher, W. Millerick, B. W. Gonin, A. Lindsay, L. W. Crowe, S. H. Hay, R. Marshall, F. L. Brown, A. Macintyre, T. B. Moffatt, S. A. Bull, D. T. H. Croly, A. F. Cole, A. B. MacLean, S. G. Dixon (on account of ill-health contracted on active service, and granted honorary rank of Captain), E. W. Braithwaite (on account of ill-health), K. B. J. Vickers (on account of ill-health). Temp. Lieuts.: J. F. Windsor, W. Shaw, G. L. Ranking, C. W. Cockin, J. R. McFerran, L. Cohen, R. D. R. Allison, G. H. Hanna, W. A. Sheldon, G. A. Ticehurst, J. A. C. Doonan, G. L. Crimp, F. H. Wolfe, J. Longworth, H. Austin-Smith, J. R. Davies, J. W. Turner, J. Brownlee, P. A. Steven, C. F. P. Plunkett, H. W. B. Montegue, W. Butterley (on account of ill-health), V. C. H. Dearden, J. A. Durnford (on account of ill-health), W. Beckton, F. W. Waterworth, J. G. Priest, E. A. W. English, E. G. D. Menzies, E. H. Drake, A. B. Rendel, W. L. Loxton, A. Reid, G. H. Rodolph, J. R. Thompson, A. J. Kearney, H. T. Evans, W. S. Darby.

SPECIAL RESERVE OF OFFICERS.

J. Michaelson, from Glasgow University Contingent O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

Lieut.-Col. (temp. Col.) H. H. C. Dent relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services, and is restored to the Establishment.

Major J. E. O'Connor relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

Major R. W. Forrest relinquishes his commission on account of ill-health, and is granted permission to retain his rank and wear the prescribed uniform.

Major (temp. Lieut.-Col.) C. H. Lindsay, C.M.G., is seconded while holding an appointment as Assistant Director of Medical Services.

Major E. L. Anderson, from Army Medical Service, to be Major.

Capt. (temp. Major) H. J. Dunbar is restored to the Establishment.

Capt. G. G. Plant, from Durham Light Infantry, to be Captain, and is granted the honorary rank of Lieutenant-Colonel.

Capt. A. H. Worrall, from Lincolnshire Regiment, to be Captain.

Capt. (temp. Major) (Brevet Major) D. W. Boswell relinquishes his temporary rank on alteration in posting.

Capt. D. E. Evans relinquishes his commission on account of ill-health, and is granted the honorary rank of Lieutenant-Colonel.

Capt. H. J. Robson relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Capt. (temp. Lieut.-Col.) N. C. Rutherford, D.S.O., from Field Ambulance, to be Captain.

Lieut. W. E. Porter, from Lincolnshire Regiment, to be Lieutenant.

C. S. Crichton (late Captain, R.A.M.C.) to be temporary Major, Surrey Medical Volunteer Corps.

T. H. Goodman to be temporary Lieutenant and Medical Officer, 5th Battalion, Suffolk Volunteer Regiment.

J. Hartigan to be temporary Lieutenant and Medical Officer, 1st Battalion, Glamorganshire Volunteer Regiment.

J. M. Martin to be temporary Lieutenant and Medical Officer, 4th Battalion, Gloucestershire Volunteer Regiment.

H. Farncombe (late Lieutenant, R.A.M.C.) to be temporary Lieutenant and Medical Officer, 3rd Battalion, Hampshire Volunteer Regiment.

F. McKenna to be temporary Lieutenant and Medical Officer, 1/1st Battalion, Ayrshire Volunteer Regiment.

W. O. Piper to be temporary Lieutenant and Medical Officer, 2nd Battalion, Lancashire Volunteer Regiment.

D. Fenton to be temporary Captain and Medical Officer, 1st Battalion, Lancashire Volunteer Regiment.

J. E. Healey (late Lieutenant, R.A.M.C.) to be temporary Lieutenant and Medical Officer, 12th Battalion, Lancashire Volunteer Regiment.

J. A. H. Barnes (late Captain, I.M.S.) to be temporary Captain and Medical Officer, 1st Battalion, Leicestershire Volunteer Regiment.

H. Johnson to be temporary Lieutenant and Medical Officer, 19th Battalion, County of London Volunteer Regiment.

W. Robertson (late Captain, R.A.M.C. (T.)) to be temporary Captain and Medical Officer, 2/1st Battalion, Midlothian Volunteer Regiment.

H. Tipping (late Lieutenant, R.A.M.C.) to be temporary Captain and Medical Officer, 1st Battalion, Middlesex Volunteer Regiment.

E. H. Alton (late Lieutenant, R.A.M.C.) to be temporary Captain and Medical Officer, 3rd Battalion, Worcestershire Volunteer Regiment.

A. Wilson (late Major, 2nd E.R. of Yorks R.G.A Volunteers) to be temporary Captain and Medical Officer, 1st Battalion, East Riding Volunteer Regiment.

P. Macdonald (late Lieutenant, R.A.M.C.) to be temporary Captain and Medical Officer, 22nd Battalion, West Riding Volunteer Regiment.

DEATHS IN THE SERVICES.

The death in India of Sir Charles Pardey Lukis, K.C.S.I., Director-General of Indian Medical Services, aged 60, is announced. He entered the Indian Medical Service in 1880 and served with the Mhow Division, the Wuzeeree Expedition in 1881 and with the Loheb Valley Expedition three years later. He became Civil Surgeon of Simla in 1888 and in 1905 was appointed principal and professor of medicine in Calcutta Medical College and senior physician at the College Hospital. In 1914 he was appointed Director-General.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

PARLIAMENT resumed on Tuesday, Oct. 16th, after the autumn recess.

A Midwives Bill for Ireland.

Mr. DUKE, the Chief Secretary for Ireland, proposes to introduce a Midwives Bill for Ireland at an early date.

War Pensions Committees.

A Bill has been presented in the House of Commons by Mr. HODGE, the Minister of Pensions, for the purpose of providing for the inclusion on local committees constituted under the Naval and Military War Pensions Act of representatives of disabled men discharged from the Naval and Military Services of His Majesty. It has been read a first time.

HOUSE OF COMMONS.

TUESDAY, OCT. 16TH.

A Circular Memorandum.

Mr. PRINGLE asked the Under Secretary for War whether a confidential letter was issued by the Director-General of Medical Service in June to deputy directors of medical service with reference to expediting the discharge of wounded men from hospitals; and, if so, whether he would publish the letter.—Mr. MACPHERSON replied: My honourable friend is referring, I think, to a circular memorandum issued by the Deputy Director of Medical Services, Scottish Command, on June 26th last. I have ascertained that this circular was not based upon any special instructions from the War Office but upon general principles. As I said in debate on August 17th, I do not think that the interpretation placed upon it by my honourable friend is borne out by the complete text, a copy of which I will place in the library.

Instructions to Medical Boards.

Mr. BONAR LAW (Chancellor of the Exchequer) informed Mr. PRINGLE that the instructions to medical boards under the new authority had been drawn up and were now being printed. They would shortly be laid upon the table of the House.

Amendment of Insurance Act.

Answering Mr. HOGGE, who asked when it was proposed to introduce a new Insurance Bill, Sir E. CORNWALL (representing the National Insurance Commissioners) said: I hope to be in a position to give the desired information shortly.

Women Workers in V.A.D. Hospitals.

Mr. BENNETT-GOLDNEY asked the Chancellor of the Exchequer whether he would take an early opportunity of making it known whether women workers and nurses voluntarily or for partial remuneration had undertaken all the arduous and various duties in connexion with Voluntary Aid Detachment hospitals for our wounded soldiers; whether he was aware that many thousands of these women had been carrying on their work for the whole period of the war, mostly unnoticed and often forgotten; whether he would remember that a number of them had continued to carry out their duties at serious sacrifices of both health and money; and, whether in the circumstances, he would make such humble representations to His Majesty as would favourably place before him the claims of these women who had already earned the national gratitude to some honourable but inexpensive recognition such as a distinctive ribbon, so that all those who merited it should be able to receive such an honour now instead of their being made to wait until some unknown period after the war when many of them might have been forced by illness, death, or other circumstances to cease their work.—Mr. BONAR LAW answered: The Government is fully aware of the facts to which my honourable and gallant friend refers in the first three parts of his question. As regards the last part he may rest assured that every endeavour is being made, in conjunction with the Chairman of the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem and of the Central Joint Voluntary Aid Detachment Committee, to afford such recognition as is possible of the services of these ladies, and when final details respecting the award of the Order of the British Empire have been settled further particulars for the award will be available. I am informed that neither the War Office nor the other departments concerned regard with favour the suggestion that a distinctive ribbon should be instituted.

WEDNESDAY, OCT. 17TH.

Recruiting Medical Boards.

Mr. HOGGE asked the Parliamentary Secretary to the Ministry of National Service whether he could now state which of the recommendations of the Select Committee on Medical Boards the Government had adopted; and whether it was proposed to provide any means whereby men improperly passed into the Army could appeal their cases.—Mr. BECK replied: The organisation of recruiting medical boards is being transferred from the War Office to the Ministry of National Service. After a date early in November all men waiting to be called up for military service or holding a certificate of temporary or conditional exemption may claim to be graded by one of the National Service Medical Boards. Such re-examination will not interfere with a subsequent appeal to an appeal tribunal. The machinery for making appeals to appeal tribunals for re-examination will also be ready early in November. Medical assessors acting with the appeal tribunals will re-examine all men whose applications for re-examination are granted by the appeal tribunals. The finding of the appeal tribunal assessors will be final as regards a man's physical condition. The appeal tribunals and their assessors are to be administered by the Local Government Board. Attested men will have the same rights of appeal as unattested men.

THURSDAY, OCT. 18TH.

A Ministry of Health.

Answering Mr. DILLON, Mr. BONAR LAW (Chancellor of the Exchequer) said: The proposal of a Ministry of Health is under careful consideration. At present the various difficulties needing to be provided for in the establishment of such a Ministry have not reached any widely agreed solution, and as long as this is so it is not possible to undertake to introduce a Bill for the purpose. Steps, however, are being taken which will, it is hoped, secure substantial agreement amongst those who are actively engaged in the work of national health.

Mr. DILLON: If substantial agreement cannot be arrived at before the end of the session, will the right honourable gentleman give the House the opportunity of discussing this most important subject?—Mr. BONAR LAW: Perhaps the honourable Member will put down a question towards the end of the session and I shall be glad to answer it.

Soldiers Suffering from Lung Trouble.

Major HUNT asked the Chancellor of the Exchequer whether, in view of the fact that British and Irish troops suffering from lung trouble were not at present allowed to settle in the Dominions, and that there were considerable numbers of these troops suffering from lung trouble caused by service during the war and from gas attacks, and in view of the fact that the Ministry of Pensions had stated their inability to do anything to enable these men to go to and reside in a dry climate, as declared to be necessary by medical officers to prevent the development of tuberculosis, he could say whether the Government would apply to the Dominion governments for areas of land in their countries to be set apart for the purpose of settling these men in a dry climate and so saving their lives for the Empire.—Mr. BONAR LAW answered: The points suggested in my honourable friend's question are being considered.

Surgeon-General Sir W. Babtie.

Mr. KING asked the Under Secretary for War whether he could state the present position of those officers censured in the report of the Mesopotamia Commission; and what action the Army Council proposed to take.—Mr. MACPHERSON wrote in reply: I am afraid that I cannot add much to the answer which I gave to my honourable friend's question on this subject in August last. Surgeon-General Sir W. Babtie has submitted his explanation, the Army Council has found it satisfactory, and Surgeon-General Babtie has been recalled from leave and has resumed his official duties. The Council still awaits the explanations of the other officers concerned.

Medical Officers of the Territorial Force.

Colonel GRETTON asked the Under Secretary for War whether he was aware that a number of medical men joined the Territorial Forces as medical officers *à la suite* with the rank of captain, and that an undertaking was given that such officers should be promoted to the rank of major after eight and a half years' service; whether he was aware that this term expired in the case of a number of medical officers *à la suite* in June last and that no promotions had taken place; and whether it was intended to carry out the undertaking which was given at the time these officers joined the service.—Mr. MACPHERSON (in a written answer) replied: The answer to the first part of the question is in the negative. Officers appointed to the *à la suite* staffs of general hospitals serve under different conditions to other officers of the Royal Army Medical Corps, and promotion is not based on any qualifying time period.

Medical Service of the Expeditionary Force.

Colonel GRETTON asked the Under Secretary for War whether the Commission recently sent to examine into the medical service of the Expeditionary Force had yet reported; if not, when the report might be expected; and whether it would be laid upon the table of the House.—Mr. MACPHERSON wrote in reply: No report has been received, nor can I say when one will be in possession of the Army Council. I am

afraid that no promise to make the report public can be given in advance.

Dental Treatment of Soldiers.

In the course of replies to Mr. PENNEFATHER, Mr. MACPHERSON stated that the total number of commissioned dental officers in the Army was 517.

Physical Standards of Recruits.

Sir WILLIAM COLLINS asked the Parliamentary Secretary to the Ministry of National Service whether he would lay upon the table of the House the Memorandum which had been prepared containing directions as to the standards of physical fitness of recruits and the classification which was to supersede the present A, B, and C categories with their subdivisions.—Mr. BECK replied: The Memorandum asked for by my honourable friend is at present under the consideration of the Advisory Medical Board of the Ministry and will be presented to the House at an early date.

Exchange of Prisoners of War.

In the course of replies to Mr. HUME-WILLIAMS on the question of the exchange of prisoners of war, Mr. J. F. HOPE (representing the War Prisoners' Department) stated that no prisoners had yet been interned in Holland under the Hague agreement, but 800 prisoners had already been repatriated from Switzerland as a result of it. Swiss medical commissioners were now visiting Germany to select British prisoners of war for transfer to Switzerland. They had not yet, it was believed, completed their inspection, but once it was accomplished there should be no delay in the despatch of our men to Switzerland.

FRIDAY, OCT. 19TH.

Pay in the Royal Army Medical Corps.

Mr. JOYNSON-HICKS asked the Under Secretary for War what was the pay at home and abroad of a captain in the Territorial Royal Army Medical Corps and a lieutenant in the new Royal Army Medical Corps.—Mr. MACPHERSON replied: The pay and allowances of a captain in the Territorial Force, Royal Army Medical Corps, vary from 19*s.* to 22*s.* 2*d.* a day. The pay of a temporary lieutenant engaged on a contract basis is 24*s.* a day inclusive. The captain is entitled to a larger gratuity on cessation and to other advantages, but the question of the comparative emoluments is under the consideration of the Council.

Mr. JOYNSON-HICKS: Is the honourable gentleman aware that there is very grave dissatisfaction in the Territorial Medical Force in regard to this apparent discrepancy?—Mr. MACPHERSON did not reply.

MONDAY, OCT 22ND.

National Insurance Payments.

Mr. SNOWDEN asked the representative of the National Insurance Commissioners whether he was aware that the panel doctors in many parts of the country, especially in rural districts, had only received from 25 to 50 per cent. of the sums due to them for their services for the year 1916; and whether steps would be taken at once to pay up these outstanding arrears and thereby remove a sense of grievance under which these men were suffering.—Sir E. CORNWALL replied: In the great majority of cases the final payments of the doctors have been completed for the year 1916. In those areas where some balance of the year's remuneration is outstanding, the amount can only be small, as the sums which have been advanced monthly or quarterly during the year will have approximated to the total sums which will be found to be due on the final settlement. I think, therefore, the honourable Member must have been misinformed, but if he will furnish me with particulars of any cases which he has in mind I will cause inquiries to be made.

Imports of Opium.

Sir WILLIAM COLLINS asked the Parliamentary Secretary to the Board of Trade whether Indian opium was now largely used in this country in place of opium of Turkish or Persian origin for the manufacture of morphia and officinal preparations; and how much opium was used for these purposes in the year 1916 and what were the sources from which it was derived.—Mr. WARDLE wrote in reply: I am informed that for the last 18 months Indian opium has been practically the only description available for morphia manufacture, Persian supplies being relatively insignificant. The following statement shows the total net quantity of opium retained for use and manufacture in the United Kingdom in 1913 and 1916, and the countries from which it was originally consigned:—

Net Imports of Opium Retained.

Consigned originally from:—	1913. lb.		1916. lb
India	4,824	.....	437,237
Persia...	35,020*	.....	82,362
Turkey	270,123	.....	25,843
Other countries	45,393	.....	15,237

* Exports in excess of imports.

TUESDAY, OCT. 23RD.

Dental Service in the Army.

Colonel YATE asked the Under Secretary for War whether the dental service of the Army was in charge of a special director-general or of any recognised head of the dental service; what number of dentists were attached to each division; and, if less than one to each division, would he have arrangements made to complete to that strength.—Mr. MACPHERSON replied: The Director-General, Army Medical Service, is the recognised chief of the dental officers employed with the Army. There are no dentists in the war establishment of divisions, such officers being allotted to duties in the field at the discretion of the general officer commanding-in-chief, and it is not proposed to interfere with the discretion of these officers in this matter.

Medical Appliances in Mesopotamia.

Mr. E. WASON (on behalf of Sir J. JARDINE) asked the Under Secretary for War whether as regards the troops at all the stations on the Shatt-el-Arab, the Tigris, and Euphrates he was in a position to assure the House that sufficient provision had been made for medical and surgical treatment including medicines and appliances, and for the supply of fresh vegetables; and whether, and what, provision had been made of fruits.—Mr. MACPHERSON said in reply: The General Officer Commanding-in-Chief is responsible that sufficient provision is made for the medical and surgical treatment, including medicines and appliances for the troops at all stations in any particular theatre of war, and I have no reason to suppose that provision in Mesopotamia is not merely sufficient but ample in every respect. All demands for medical stores are promptly met and in addition to the medical store depôts in Mesopotamia a special depôt has been established at Bombay to facilitate supply. The supply of fresh vegetables is good and amounts to 67 per cent. of the total vegetable ration. Fruit and dates are also available locally and issued to the troops.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BADGEROW, GEORGE W., Lieutenant-Colonel, C.A.M.C., has been appointed Honorary Consulting Surgeon in Diseases of the Throat and Ear to the South African Military Hospital, Richmond Park.

DUMMERE, H. H., M.R.C.S., L.R.C.P. Lond., Medical Officer to No. 4 District of Bromley.

ROBERTS, C. HUBERT, M.D., F.R.C.S., F.R.C.P., Temporary Assistant Physician-Accoucheur to St. Bartholomew's Hospital (for duration of the war).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

BARNSLEY, BECKETT HOSPITAL.—Second Female House Surgeon. Salary £225 per annum, with board, &c.

BELGIAN CONGO.—Two Medical Officers. Salary £800 per annum and residence.

BOLTON INFIRMARY AND DISPENSARY.—Female Senior House Surgeon. Salary £300 per annum, with board, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £140 per annum with board, &c.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon. Salary £200 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BROMSGROVE, WORCESTERSHIRE ASYLUM, Barnsley Hall.—Temporary Assistant Medical Officer.

CHINGFORD, WALTHAMSTOW URBAN DISTRICT COUNCIL, HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Officer. Salary £— per annum, with board, &c.

DERBY, DERBYSHIRE SANATORIUM FOR TUBERCULOSIS, Walton Lane, near Chesterfield.—Resident Assistant Medical Officer. Salary £— per annum, with board, &c.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Haverstock Hill, N.W.—Casualty Officer for six months. Salary at rate of £150 per annum, with board, &c.

LINDSEY (LINCOLNSHIRE), COUNTY OF THE PARTS OF.—Assistant Medical Officer. Salary £400 per annum.

LONDON FEVER HOSPITAL, Islington, N.—Resident and Assistant Resident Medical Officers. Salaries £300 and £180 per annum respectively, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Medical Registrar. Salary at rate of 40 guineas per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Female Resident Medical Officer, unmarried. Salary at rate £200 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

MANCHESTER MATERNITY AND CHILD-WELFARE CENTRES.—Female Medical Officer for Treatment of Children's Diseases. Salary £350 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £150 per annum, with board, &c.

MANCHESTER ROYAL INFIRMARY.—Resident Surgical Officer, £225 per annum; Assistant Resident Surgical Officer; Accident Room House Surgeon; and Resident Medical Officer, Central Branch. £200 per annum each.

MINISTRY OF PENSIONS.—Medical Men to serve on Medical Boards.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months and Senior Resident Medical Officer for a further four months. Salary at rate of £60 per annum and £80 per annum, with board, &c.

ROCHDALE INFIRMARY AND DISPENSARY.—Senior House Surgeon and Second House Surgeon. Salaries £400 and £200 per annum respectively, with board, &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

ROYAL FLYING CORPS HOSPITAL, 37, Bryanston-square, W., and 82, Eaton-square, S.W.—Resident Medical Officer for Convalescent Home for Officers of Royal Flying Corps. Salary £500 per annum with board, &c.

ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL), City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer at Ledge Moor Hospital.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Lytham in Lancashire.

Births, Marriages, and Deaths.

BIRTHS.

MACKENZIE.—On Sept. 15th, at Great Chart, near Ashford, Kent, the wife of Captain (Temporary Lieutenant-Colonel) D. F. Mackenzie, R.A.M.C., of a daughter.

MESSITER.—On Oct. 16th, at Cappoly, Dudley, Worcs., Rona, the wife of Captain C. C. Messiter, R.A.M.C., of a daughter.

MOSS.—On Oct. 17th, at Coram Towers, Lyme Regis, the wife of Athole Ross, M.D., M.R.C.P., of a daughter.

SCOTT.—On Oct. 16th, at Lancaster-place, W.C., the wife of Captain E. Scott, D.S.O., R.A.M.C., a son.

MARRIAGES.

DAVIES—AKED.—On Oct. 20th, at St. Peter's, Harrogate, Arthur Davies, Captain, R.A.M.C., to Erica Violet, eldest daughter of Mr. and Mrs. H. E. Aked, Highgreen, Harrogate.

LANE—CLARK.—On Oct. 16th, at St. Augustine's, Stepney East, Captain Harold D. Lane, M.C., R.A.M.C. (T.F.), to Nellie Mary Louise, daughter of Lieutenant Colonel Clark, D.S.O., A.O.D.

LIVESEY—LIVESEY.—On Oct. 18th, at S. Mary, Buckland, Surgeon-Major E. W. Livesey, R.A.A. and E., of Alderney, Channel Islands, to Hilda Frances, third daughter of the late Frank Livesey, M.Inst.C.E., and Mrs. Livesey, of Buckland Corner, Reigate.

ZIANI—ZIANI DE FERRANTI.—On Oct. 20th, at the Church of the Holy Name, Manchester, William Erling Ord, M.D., R.A.M.C., to Vera Catherine Gertrude, second daughter of Dr. and Mrs. Ziani de Ferranti, of Hollinwood, and The Hall, Baslow, Derbyshire.

DEATHS.

DAVIES.—On Oct. 17th, killed in action, Captain Frederick Charles Davies, R.A.M.C., M.R.C.P., M.B., B.C., M.R.C.S., aged 33.

GIBSON.—On Oct. 17th, of wounds, Captain (Temporary Lieutenant-Colonel) Harold Gibson, R.A.M.C., aged 33.

HILL.—On Oct. 11th, killed in action, Lieutenant R. Gordon Hill, R.A.M.C., M.C., Coldstream Guards.

NICHOLSON.—On Oct. 15th, Tom M. Nicholson, M.A. Oxon., M.R.C.S., L.R.C.P. Lond., after great suffering, heroically borne.

SAYRES.—On Oct. 10th, of wounds received July 17th, Alexander Ward Fortescue Sayres, Lieutenant-Colonel, R.A.M.C. (T.F.), of Fern Bank, Hartley, Plymouth.

SIMPSON.—On Oct. 18th, at Southgate-road, N., after a few days' illness, Dr. C. Stanley Simpson.

STERLING.—On Oct. 16th, at a nursing home, Captain Robert Sterling, M.A., M.B., B.S., R.A.M.C., hon. Canon of St. George's Collegiate Church, Jerusalem, for 24 years a missionary of the C.M.S., Gaza, Palestine, aged 58.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

The following journals, magazines, &c., have been received:—Canadian Medical Association Journal, Therapeutic Gazette, British Journal of Dental Science, Philippine Journal of Science, Boletin de Medicina é Higiene, Duodecim, St. Paul Medical Journal, Hospital Gazette, Medical Officer, Boletin del Hospital del Salvador Santiago de Chile, Maternity and Child Welfare, Journal of Comparative Pathology and Therapeutics, Bulletin of the Johns Hopkins Hospital, Journal de Médecine de Bordeaux, Archives of Radiology and Electrotherapy.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Lord Rayleigh, O.M.: On the Reflexion of Light from a Regularly Stratified Medium.—Sir William Abney, K.C.B.: Two Cases of Congenital Night-blindness.—Hon. R. J. Strutt: Duration of Luminosity of Electric Discharge in Gases and Vapours: Further Studies.—Mr. G. W. Walker: Surface Reflexion of Earthquake Waves.—Dr. H. S. Allen: Characteristic Frequency and Atomic Number (communicated by Prof. O. W. Richardson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, Nov. 2nd.

LARYNGOLOGY (Hon. Secretaries—W. D. Harmer, Frank A. Rose): at 4 P.M.

Presidential Address.

Cases.

ANÆSTHETICS (Hon. Secretaries—F. E. Shipway, Ashley S. Daly): at 8.30 P.M.

Paper:

Lieut.-Col. J. F. Silk, R.A.M.C.: The Administration of Anæsthetics in Home Military Hospitals.

Demonstration:

Dr. Hugh R. Phillips: Apparatus for Administering Chloroform and Ether with Oxygen.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY.—8.30 P.M., Paper: Capt. H. E. Boyle, R.A.M.C.(T.): Experiences in the Use of Nitrous Oxide and Oxygen with Regulated Re-breathing in Military Surgery at the First London General Hospital.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 24th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 18	...	81	55	35	42	43	Fine
,, 19	0·15	79	53	40	43	44	Cloudy
,, 20	...	74	55	40	43	44	Fine
,, 21	...	85	58	43	45	48	Fine
,, 22	...	90	59	47	47	47	Fine
,, 23	0·07	92	54	46	48	50	Cloudy
,, 24	...	62	49	38	38	40	Fine

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Offices: 423, STRAND, LONDON, W.C. 2.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

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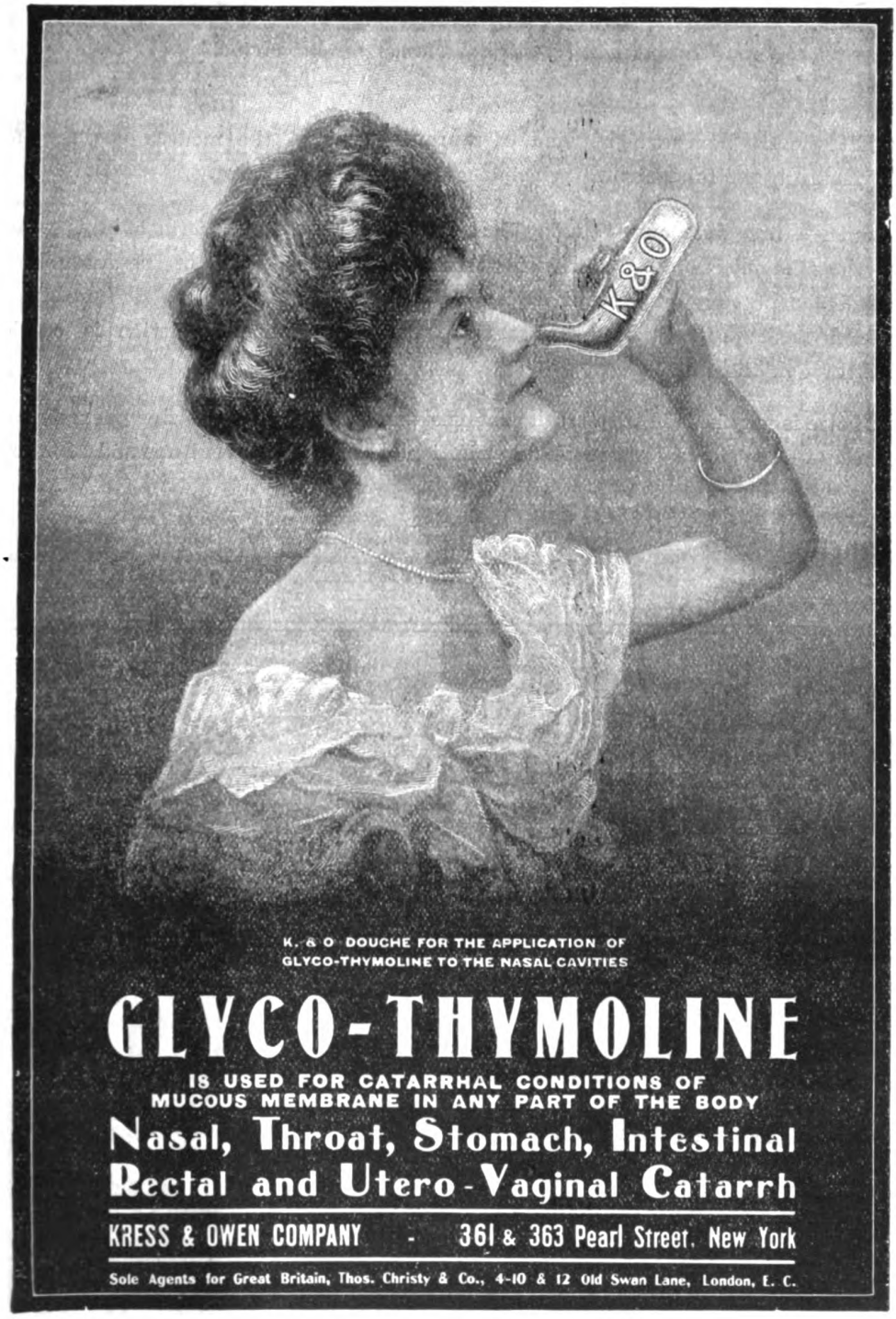
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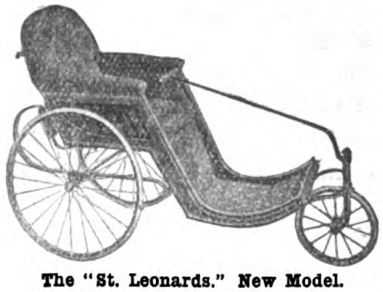
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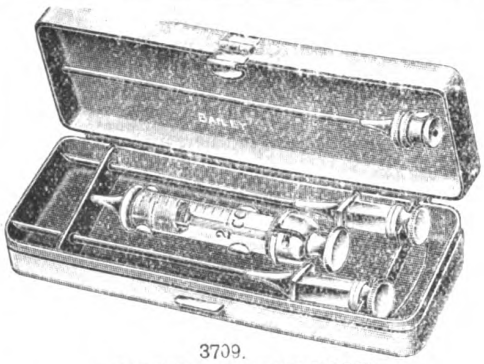
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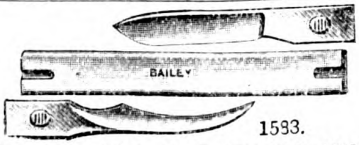
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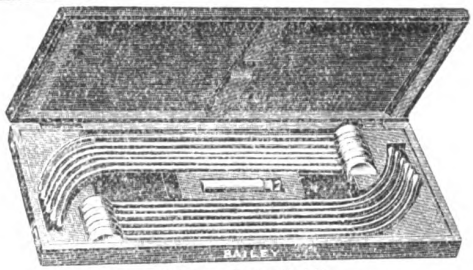
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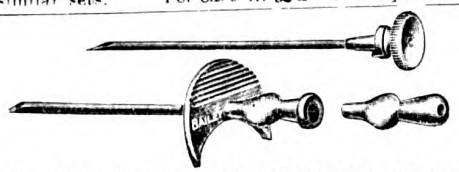
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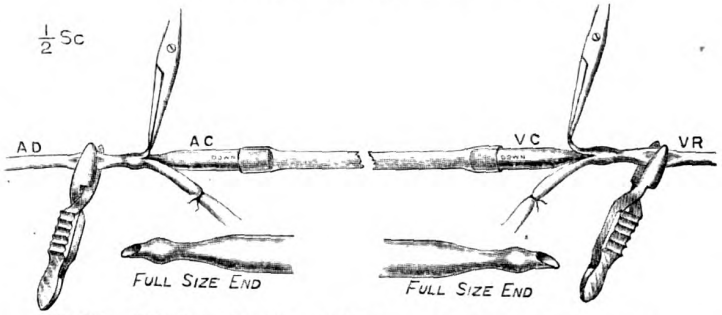
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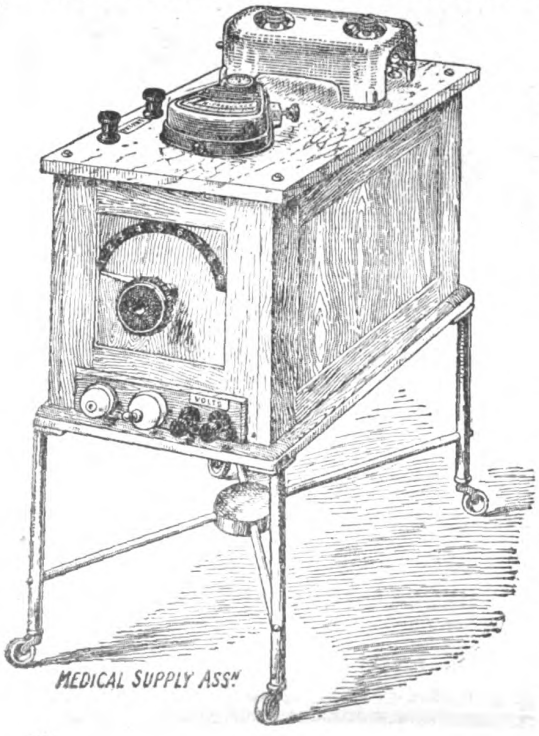
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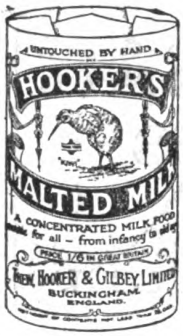
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(Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

TO MEMBERS OF THE MEDICAL PROFESSION.

IONIC MEDICATION, RADIANT HEAT,

MASSAGE, REMEDIAL EXERCISES, VIBRATION, HIGH FREQUENCY, SCHNEE FOUR CELL BATHS, NAUHEIM and AACHEN TREATMENTS.

EDGAR W. SHARMAN

(DIPLOMATE, FIRST PLACE WITH DISTINCTION, NATIONAL HOSP., LONDON),

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Telephone No.: MAYFAIR 1324. Tel. Ad.: "SHARMANITE, LONDON."

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at **COLTHURST HOUSE SCHOOL.**

Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

PORTSMOUTH CORPORATION MENTAL HOSPITAL.

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

ST. GEORGE'S RETREAT,

BURGESS HILL, SUSSEX.

An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. New Marine Brighton Residence for change. Voluntary Boarders taken.

Resident and Visiting Medical Officers. London 1¼ hours.

For terms, &c., apply to the Superioress.

Telephone: Post Office 90 x. Telegrams: "Wivelsfield Green."

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes. This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 307.

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

Associated Rooms, Private Rooms, or Suites. Very moderate terms. Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.

Telephone: 494 Brixton.

Telegraphic Address: "Relief, Old-Catton." Telephone: "290, Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, near Norwich.

A High-class Home for the **Curative Treatment** of Nervous Affections. Situated a mile from the City of Norwich. **Special** and **Separate** accommodation is provided for those suffering from **Hysteria** and for cases of **Incipient Mental** trouble, who can be received as **Voluntary Boarders** without certificates and occupy their own private suites of apartments. A staff of experienced nurses has been organised to take charge of patients in their own homes. For terms, &c., which are moderate and inclusive, apply to the Misses McLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., &c., Medical Superintendent.

THE MOAT HOUSE, TAMWORTH, STAFFORDSHIRE.

A HOME for Nervous and MENTAL CASES.

Stations: L. & N. West. and Mid. Railways.

The House stands in grounds of ten acres (within five minutes drive of either station), and is devoted to the care and treatment of a few Ladies suffering from Nervous and Mental Affections, who enjoy the comfort, privacy, and occupations of home life. Voluntary patients are received without certificates. For terms, &c., apply to the Resident Licensees, EDWARD HOLLINS, M.A. Cantab., or Mrs.) S. A. MICHAUX.

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

WYE HOUSE, BUXTON.

ESTABLISHED 1857. *NEW INSTITUTION COMPLETED* 1901.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED.

VOLUNTARY BOARDERS CAN BE RECEIVED.

Situated 1200 feet above sea level. Facing south, sheltered from north and east 14 acres grounds, tennis, croquet, golf, curling. Billiard rooms, theatre, workshop in house. Motor-car drives. Garage. Ten minutes from Pavilion Gardens, Baths, and L. & N.W. and Mid. stations. Seaside branch in N. Wales.

For terms, &c., apply to the Res. Medical Superintendent, GRAEME DICKSON, L.R.C.P., &c. [NAT. TEL. 130.

ST. ANDREW'S HOSPITAL

FOR MENTAL DISEASES,

NORTHAMPTON.

For the Upper and Middle Classes only.

President—The Right Hon. the EARL SPENCER, K.G.

This Registered Hospital is pleasantly situated in 118 acres of park and pleasure grounds.

Every facility is provided for cricket, football, hockey, croquet, lawn-tennis, bowls, golf, motoring, boating, and gardening.

Terms from 31s. 6d. a week. Voluntary boarders not under certificates are received.

Patients paying higher rates can have special Attendants, Horses and Carriages, and Private Rooms in Villas in the Hospital grounds, or at

MOULTON PARK,

a branch establishment, two miles from the Hospital, where there is a farm of 473 acres, which supplies the Hospital with meat, milk, and other farm produce.

BRYN-Y-NEUADD HALL, LLANFAIRFECHAN,

the Seaside House of St. Andrew's Hospital, is beautifully situated in a Park of 331 acres, close to the Sea, and in the midst of the finest scenery in North Wales.

Patients can enjoy good cricket, lawn-tennis, croquet, golf, trout fishing, and bathing.

Patients or Boarders may visit this branch for long or short periods, and can have Private Rooms in Villas in the Park.

For particulars apply to the Medical Superintendent, St. Andrew's Hospital, Northampton. TELEPHONE No. 56.

THE GRANGE, Near ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.C. Railway, Sheffield. Telephone No. 34 Rotherham.

Resident Physician—GILBERT E. MOULD, L.R.C.P., M.R.C.S. Consulting Physician—CROCHLEY CLAPHAM, M.D., F.R.C.P.E.

CHEADLE ROYAL

A HOSPITAL FOR MENTAL DISEASES,

CHEADLE, CHESHIRE.

AND ITS SEASIDE BRANCH,

GLAN-Y-DON, COLWYN BAY,

NORTH WALES.

The object of the above is to provide the most efficient means for the cure of mental diseases in those who belong to the upper and middle classes.

Voluntary boarders as well as certified patients are received for treatment.

For terms and further information apply to the Medical Superintendent, W. SCOWCROFT, M.R.C.S., &c., at Cheadle, or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from 2 to 3.

Telephone: 208 "Cheadle Hulme," 3594 "Manchester."

STRETTON HOUSE,

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church Stretton

PLYMPTON HOUSE,

PLYMPTON, S. DEVON.

This old established Licensed House offers every advantage that experience can suggest for the care and treatment of Mental Cases.

For terms, &c., apply to the Resident Physicians.

Telephone: No. 2, Plymouth. Dr. ALFRED TURNER, Dr. J. C. NIXON.

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted.

For terms, &c., apply to the Medical Superintendent

SOUTH DEVON.

COURT HALL, KENTON,

Near EXETER.

Private Licensed House for the Treatment of **MENTAL DISEASES.** Limited to Eight Ladies. Estab. 50 years.

Resident Physician—BERTHA MULES, M.D.

Terms on application. *Telephone: Starcross 19.*

LONDON FEVER HOSPITAL,

LIVERPOOL ROAD, ISLINGTON, N.

FOR THE TREATMENT OF NON-PAUPER PATIENTS SUFFERING FROM INFECTIOUS FEVERS.

Part of the cost is paid by the patient, the balance being found by the Hospital. There are a few private rooms, at 5½ guineas a week, payable weekly in advance. No aid is received from the rates. Subscribers domestic servants removed at small cost and treated free of charge.

For admission apply to the Secretary. W. CHRISTIE, Major.

MALLING PLACE, KENT.

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM, WEST MALLING, Telephone: No. 2 MALLING.

HEIGHAM HALL, NORWICH.

Telephone ***For Upper & Middle Classes*** 80 Norwich.

A Private Hospital for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with Special Attendants available. **Boarders** taken without certificates. **French Chef. Terms from 2 to 20 guineas weekly.** Patients sent for. J. G. GORDON MUNN, M.D., F.R.S.E., Proprietor and Res. Phys.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES.

(Formerly the EARLSWOOD ASYLUM.)

REDHILL, SURREY.

E. C. P. HULL, Esq., J.P., Treasurer.

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION, and needing SPECIAL TRAINING in useful occupations. SCHOOLS, FARMING, and various TRADE WORKSHOPS.

SELECTED CASES admitted on reduced inclusive fees. **THOSE UNABLE TO PAY** admitted by votes of Subscribers, with part-payment towards cost.

RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14–16, Ludgate Hill, E.C 4.
Telephone: Redhill 344 Telephone: City 5297

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.
Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—
LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.
MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.
Other days by appointment.

Visiting and Consulting Physicians: Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.
Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

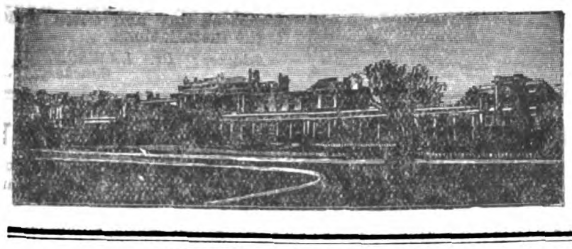
CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." **Telephone: New Cross 1057.**

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.
Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." **Telephone: New Cross 576.**

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

NEW SAUGHTON HALL

PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL CASES

POLTON, MIDLOTHIAN.

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres. There is also a SEASIDE HOUSE at GULLANE, EAST LOTHIAN.

Railway Stations—Polton, five minutes; and Loanhead, ten minutes' walk from the Institution—reached in half-an-hour from the Waverley Station, Edinburgh. Telephone—4 Loanhead.

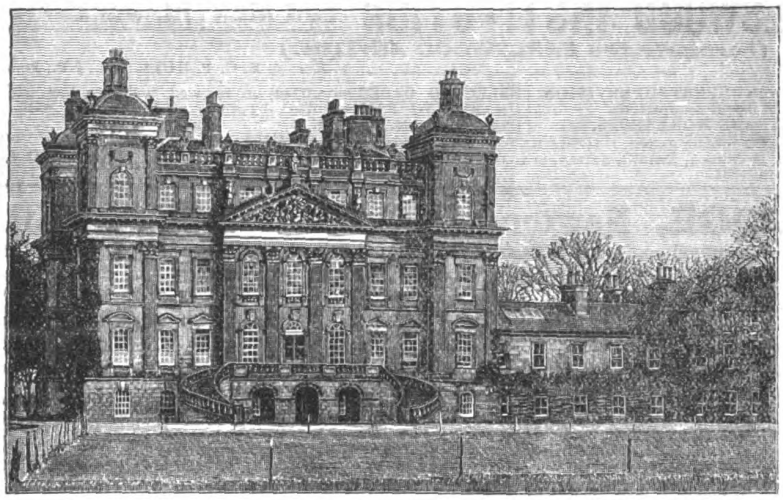
Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, J. BATTY TUKE, M.D. Inclusive terms from £84 to £400 per annum, according to requirements.

NORTHUMBERLAND HOUSE,

Telegrams: "SUBSIDIARY, LONDON." GREEN LANES, FINSBURY PARK, N. Telephone: No. 888, North.

(Established 1814.)

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.
Six acres of ground, highly situated, facing Finsbury Park.
Voluntary Boarders received without certificate. Seaside Branch at Worthing.
For particulars, apply to the RESIDENT PHYSICIAN.



DUFF HOUSE, BANFF, SCOTLAND.

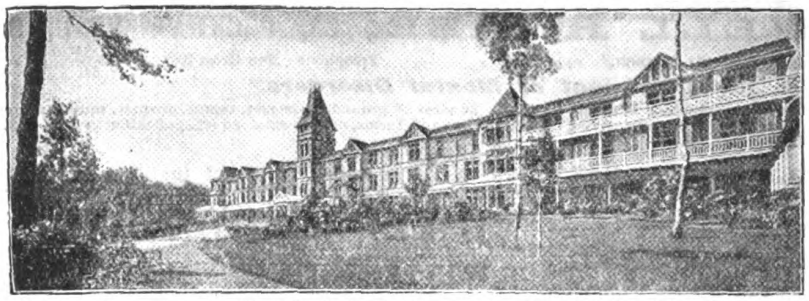
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON, Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

MATLOCK SANATORIUM

Situated on the edge of the mountain limestone area of Derbyshire, over 700 feet above sea-level. The buildings face south and command beautiful views, while on the north and east they are sheltered by lofty hills. The surrounding country is well known for its great beauty and interest. The climate is dry and bracing. The buildings are lighted by electricity and heated by radiators.

Treatment is carried out on modern lines, all special methods being available in suitable cases. A new X-ray apparatus has been installed, and there is a complete equipment for the carrying out of up-to date methods in all Tubercular and other Pulmonary cases.

For particulars apply to FREDERICK KINCAID, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire. Telephone and Telegraph: SANATORIUM, MATLOCK 22.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 0 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B, &c., Llanbedr Hall, Ruthin, North Wales

HOMES FOR INEBRIATE WOMEN.

ELLISON LODGE, Herne Hill, S.E.

HAMOND LODGE, Terrington St. Clement, King's Lynn, [Norfolk.

TEMPLE LODGE, Torquay.

Terms: Drawing-Room, £2 2s., £1 1s.; Work-Room, 15s., 12s. 6d., 10s.; Kitchen, 7s. 6d. weekly.

REV. GERALD A. THOMPSON, Secretary Church of England Temperance Society, 50, Marsham-street, Westminster, S.W.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88.
Telegrams: "HYDRO, CATERHAM."

Resident Physician:
A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

The Royal Alexandra Hospital for

SICK CHILDREN, Dyke-road, Brighton (61 beds).—A HOUSE SURGEON (Male or Female) required. Salary £200 a year, with board, lodging, and washing. Candidates must be registered under the Medical Act. Applications, with copies of recent testimonials, must be sent to Board Room, 14th September, 1917. A. F. GRAVES, Secretary.

District Infirmary and Children's

HOSPITAL, Ashton-under-Lyne (General Hospital of 175 beds, 30 of which are used for Wounded Soldiers and Sailors).—HOUSE SURGEON. The post of House Surgeon will become vacant at the end of the year. Applications from duly qualified Ladies or Gentlemen will now be received. Salary £250 per annum, plus fees, and board, residence, and washing.

FRANK OLIVER,
General Superintendent & Secretary.

Bridgwater Hospital. — Wanted, a

HOUSE SURGEON (Male or Female), if male ineligible for Army, fully qualified and registered. Salary £140 per annum, with board, lodging, and washing.

Duties to commence about November 10th.

Applications, with copies of not more than three testimonials, should be sent to the Honorary Secretary immediately.

Bank Chambers, Bridgwater. EDWARD TREVOR, Hon. Sec.

[AMENDED ADVERTISEMENT.]

County of the Parts of Lindsey

(Lincolnshire).—ASSISTANT MEDICAL OFFICER.—Applications are invited for the position of Assistant Medical Officer (Male or Female) to assist the County Medical Officer in School Medical Inspection, Maternity and Child Welfare work, &c.

Salary £400 per annum, with reasonable out-of-pocket and travelling expenses.

Applications, on forms to be obtained from the undersigned, must be received by 5th November, 1917.

R. ASHLEIGH GLEGG, County Medical Officer of Health.
County Health Department, 284, High-street, Lincoln.

Queen Charlotte's Lying-in Hospital,

Marylebone-road, N.W. 1.—ASSISTANT RESIDENT MEDICAL OFFICER Male (ineligible for Military service) or Female, required. Applicants must be registered The appointment is for four months. The selected candidate will be expected to proceed to the appointment of Senior Resident Medical Officer (also for four months) at the end of the term of office on the recommendation of the Medical Staff. The salary of the Assistant Resident Medical Officer is at the rate of £60 per annum and of the Senior Resident Medical Officer £80 per annum, with board, residence, and washing. Applications, with copies (not originals) of not more than three testimonials, will be received by the Secretary up to November 7th. Canvassing is prohibited. Duties to commence on December 1st, 1917.

ARTHUR WATTS, Secretary.

Walthamstow Urban District Council.

—HOSPITAL FOR INFECTIOUS DISEASES, Chingford.—RESIDENT MEDICAL OFFICER.—Applications are invited for the above position from qualified and registered Practitioners (Men or Women).

Preference will be given to candidates with experience of Fever or who have obtained a Diploma in Public Health, the appointment to be for one year certain. Commencing salary £275 per annum, with rooms and board. Applications, in writing, stating age, qualifications and experience, and when able to take up duties, to be made by post only to the undersigned, such applications to be received not later than 5 o'clock P.M. on Saturday, 3rd November, 1917.

C. SYDNEY WATSON, Clerk to the Council.
Town Hall, Walthamstow, 19th October, 1917.

Derbyshire Sanatorium. (Beds 100.)

ASSISTANT MEDICAL OFFICER. — Applications are invited for the position of ASSISTANT MEDICAL OFFICER (RESIDENT) (Male or Female), at the Derbyshire Sanatorium for Tuberculosis, Walton Lane, near Chesterfield. Salary £350 per annum. A detached residence is provided for the Medical Officer, together with board, laundry, service, &c.

Candidates must be ineligible for Military Service.

Application forms may be obtained from the undersigned, to whom they must be returned, together with copies of not more than three recent testimonials, on or before Wednesday, October 31st, 1917.

SIDNEY BARWISE, M.D., B.Sc.,
County Medical Officer of Health.
New County Offices, St. Mary's Gate, Derby, Oct. 12th, 1917.

Free Eye Hospital, Southampton.—

Wanted, HOUSE SURGEON (Male or Female). Must have some knowledge of Eye work. Salary £100 a year, with board, lodging, and laundry. State when disengaged. Apply to E. T. KEMP, Secretary (pro tem.).

Hampstead General & North-West

LONDON HOSPITAL.—CASUALTY OFFICER.—Applications are invited from duly registered Practitioners for the post of Casualty Officer. The salary will be at the rate of £150 per annum, together with board, residence, &c. The appointment will be for a period of six months.

Applications, together with copies of testimonials, should be addressed to the Secretary at the Hospital, not later than Nov. 1st.

Haverstock Hill, N.W. 3, Oct. 17th, 1917.

Salisbury General Infirmary (200

beds).—Wanted, a HOUSE SURGEON, Male or Female. Salary £150 per annum, with apartments, board, lodging, and washing.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

All applications, with testimonials, to be sent to the undersigned, of whom the rules relative to the duties may be had on application.

The duties may commence from the date of the appointment.

Dated 17th Sept., 1917. S. B. SMITH, Secretary.

Rochdale Infirmary and Dispensary

(110 beds).—Wanted, a SENIOR HOUSE SURGEON (either sex). Salary £400 per annum. Also SECOND HOUSE SURGEON (either sex). Salary £200 per annum. With board, residence, and laundry. No outside visiting.

Applications, with testimonials, stating age, &c., to be sent to the undersigned, endorsed "House Surgeon."

Copy of Rules will be forwarded on application.

T. ELVYN KEBSHAW, Secretary.

Manchester Education Committee.—

Wanted, an ASSISTANT SCHOOL MEDICAL OFFICER, for the period of the war. Salary £300 per annum, rising by annual increments of £25 to £450 per annum, together with £10 per annum for travelling expenses. Particulars of duties may be obtained by sending stamped addressed foolscap envelope to the undersigned. All applications must be received not later than 29th October, 1917.

SPURLEY HEY, Director of Education.

Education Offices, Deansgate, Manchester, 10th October, 1917.

Walsall and District Hospital.—The

Committee invite applications from ladies for the post of ASSISTANT HOUSE SURGEON and ANÆSTHETIST, which will shortly become vacant. Salary £175 per annum, with board, residence, and laundry.

Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, to the undersigned.

WALTER FRANCOMBE, Secretary.

Wolverhampton & Midland Counties

EYE INFIRMARY.—HOUSE SURGEON, Male or Female, wanted at once, preferably with a knowledge of Refraction. There are 56 beds for In-patients (20 of which are reserved for Military Cases) and a large Out-patient Department.

Salary £200, with furnished apartments, board, and laundry.

Applications, with copies of recent testimonials, should reach me by the 30th October inst.

ARTHUR M. MANBY, Secretary (pro tem).

The Eye Infirmary, Wolverhampton, 16th October, 1917.

Sheffield City Hospitals. Infectious

DISEASES (440 beds).—MEDICAL OFFICER.—The City Hospitals Committee invite applications from duly qualified registered Medical Practitioners with bacteriological experience (must be ineligible for Military Service) for the post of Assistant Resident Medical Officer at the Lodge Moor Hospital.

Applications, stating age, experience, qualifications, and other essential particulars, and accompanied with copies of recent testimonials, to be sent to the undersigned, endorsed "Medical Officer," on or before October 31st, 1917.

E. H. WILLIAMS, Medical Superintendent.

City of Manchester.—The Sanitary

Committee of the Corporation of Manchester require the services of a fully qualified Whole-time LADY MEDICAL OFFICER with experience in the treatment of Children's Diseases, to hold (under the direction of the Medical Officer of Health) Consultations and Infant Clinics at the Maternity and Child Welfare Centres of the Manchester Corporation, and (under the like direction) to perform such other duties as appertain to the office.

The salary will be £350 per annum.

A statement of the duties and conditions of the office may be had on application, in writing, to the Medical Officer of Health, Civic Buildings, 1, Mount Street, Manchester.

Applications, stating age and experience, and endorsed on the envelope "Medical Officer, Child Welfare," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than Saturday, November 3rd, 1917, and be accompanied by not more than three recent testimonials.

The successful candidate will be required to contribute to the Corporation Officers' Thrift Fund, and to execute their Deed of Service.

Canvassing in any form, oral or written, direct or indirect, is prohibited. THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, October 16th, 1917.

Rotherham Hospital.—Wanted,

JUNIOR HOUSE SURGEON, Male, qualified. Salary £130, with board, lodging, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

Beckett Hospital, Barnsley.—Second

LADY HOUSE SURGEON.—The Hospital (120 beds) requires the services, at once, of a qualified Lady (British) as Second Lady House Surgeon. Commencing salary £225, with board, &c. The Hospital offers most useful experience.

Applications, with two testimonials, to

Barnsley, 24th October, 1917. R. F. PAWSEY, Hon. Sec.

The Manchester Northern Hospital

for WOMEN and CHILDREN, Park-place, Cheetham Hill-road.—The Committee of Management require the services of a duly qualified HOUSE SURGEON, to commence duties on December 1st. Salary, with apartments and board, £150 per annum.

Applications, with testimonials, and stating age and experience, to be sent to Mr. HUBERT TEAGUE, Secretary, 38, Barton Arcade, Manchester, not later than November 3rd.

The Royal Infirmary, Sheffield (363

beds).—Wanted, a HOUSE PHYSICIAN. Salary £120 per annum with board and residence. The duties of the Officer to be elected will include work in the In- and Out-Patient Departments under the supervision of the Honorary Medical Staff.

The post is an important one.

Applications, which are invited from persons who must be fully qualified, should be sent immediately, stating age, qualifications, and any previous experience. By order.

Board Room. JNO. W. BARNES, Secretary.

Royal London Ophthalmic Hospital

(MOORFIELDS EYE HOSPITAL), City-road, E.C. 1. Founded 1804.—Applications are invited from Women, or Men who are ineligible for Military Service, for the office of THIRD HOUSE SURGEON.

Applicants must be registered medical practitioners; they should state age and qualifications, and they should be prepared to begin the duties on 1st December, 1917.

Salary at the rate of £50 a year, with War Bonus after four months' service at the rate of 50 per cent. of the salary for that period. Board, residence, and laundry provided.

The appointment is for a period of not less than four months.

19th October, 1917. ROBERT J. BLAND, Secretary-Superintendent.

Manchester Royal Infirmary.—The

Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointments:—

RESIDENT SURGICAL OFFICER, £225.
ASSISTANT RESIDENT SURGICAL OFFICER, £200.
ACCIDENT ROOM HOUSE SURGEON, £200.
RESIDENT MEDICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

Each appointment is subject to the provisions of the by-laws as to notice of resignation.

Candidates must state age and send twelve copies of their application and testimonials to the undersigned on or before 9 A.M. on Wednesday the 14th November, 1917. By order.

FRANK G. HAZELL, General Superintendent and Secretary.

23rd October, 1917.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

The Royal Flying Corps Hospital,

37, Bryanston-square, W., and 82, Eaton-square, S.W.—A RESIDENT MEDICAL OFFICER is required for a Convalescent Home for Officers of the Royal Flying Corps. Salary £500 per annum, with board and residence.

Apply at once, with full particulars.

ARNOLD JAMES, Honorary Secretary.

R.F.C. Hospital, 37, Bryanston-square, W.1.

Wanted, for service in Belgian Congo,

Two MEDICAL OFFICERS with experience in Tropical Medicine and with knowledge of colloquial French.

Terms £600 per annum and residence. Two years' duration of service in Africa. Other usual terms by agreement.

Applicants must be of Allied or Neutral nationality, not eligible for Military Service, not above the age of fifty, of good constitution and in sound health.

Address, No. 520, THE LANCET Office, 423, Strand, W.C. 2.

Worcestershire Asylum, Barnsley Hall, Bromsgrove.—Wanted, for the duration of the war, a Temporary ASSISTANT MEDICAL OFFICER in order to release a medical man for Military Service. Applicants must be registered Medical Practitioners. Forms of application may be obtained from the Medical Superintendent.

London Temperance Hospital, Hampstead-road, N.W. 1.—Applications are invited for the post of MEDICAL REGISTRAR. Honorarium at the rate of forty guineas a year. The appointment is open to qualified men and women and will be vacant on the 6th November. Please communicate with the Secretary.

Bolton Infirmary and Dispensary (166 beds, mostly Surgical, including Wounded Soldiers).—Applications for the appointment of a SENIOR HOUSE SURGEON are invited from Ladies having a registered Medical and Surgical qualification. Salary £300 per annum, with apartments, board, and attendance. Applications, stating age, with copy of testimonials, should be forwarded to the undersigned, from whom further particulars may be obtained. A. E. BRISCOE, Secretary.

London Fever Hospital, Islington, N. 1.—Applications are invited from candidates of either sex for the posts of RESIDENT and ASSISTANT RESIDENT MEDICAL OFFICER of this Hospital. Candidates should be fully qualified and able to assume office at once.
Salaries £300 and £180 per annum respectively, with board and residence.
Applications, with copies of any recent testimonials should be sent to the Secretary, at the Hospital, as soon as possible.
W. CHRISTIE (Major), Secretary.

Manchester Children's Hospital, Pendlebury, near Manchester (188 beds).

Wanted, a RESIDENT MEDICAL OFFICER (Lady), who will be appointed for six or twelve months from 1st February. Candidates must be unmarried, doubly qualified, and duly registered.
Salary at the rate of £200 per annum, including war bonus. Applications, stating age and accompanied by copies of testimonials, to be sent to the undersigned at the Hospital, Pendlebury, near Manchester, at once. By order,
Oct. 26th, 1917. W. M. HUMPHRY.

The Ministry of Pensions invites applications from registered Medical Practitioners in the counties of Cumberland, Northumberland, Durham, York, Lincoln, Nottingham, Stafford, Leicester, Derby, and Rutland, preferably in the large towns, to serve on Medical Boards for the examination of, and the assessment of pensions for, men discharged from the Army for neurasthenia and Functional Nervous Disorders. The time required will not exceed six hours per diem (including an interval of one hour), for which a fee of three guineas will be paid. Those who are able to give one day a week only will be eligible for enrolment.
Applications must be made on a form, which can be obtained from the President, Special Medical Board, 78, Lancaster Gate, London, W.2.

Wanted, a fully qualified Resident MEDICAL OFFICER at an Auxiliary Military Hospital which has 200 beds and is receiving patients direct from Overseas. Salary £200 per annum, with board and lodging. Apply, County Director, V.A.D. Headquarters, Northampton.

London Lock Hospital and Rescue HOME.—WARD SISTER required. Fully trained. Salary commencing at £40, with indoor uniform. Preference will be given to a Christian woman. Applications, with full particulars, to the Secretary. 63, Harrow-road W.9.

Royal Albert Edward Infirmary, Wigan.—The Board of Management of the above Infirmary invite applications for the whole time position of SECRETARY, at a salary of £250 per annum.
Particulars of duties may be obtained from the Chairman of the Board. Applications, stating age and qualifications (accompanied by not more than three recent testimonials), must be sent to the Chairman on or before the 13th November, 1917. Canvassing is prohibited.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent. Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

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Surgeon, ineligible, 18 months' war service, wishes EMPLOYMENT, preferably Ophthalmic work.—Address, No. 524, THE LANCET Office, 423, Strand, W.C. 2.

A Doctor in General Practice in London, W. 9, could arrange for a few hours work daily at Hospital or Institution where short handed.—Address, No. 525, THE LANCET Office, 423, Strand, W.C. 2.

Dispensing-Bookkeeping with Doctor or Hospital by Gentlewoman, qualified, disengaged. Ten years' experience. Out-door; or would combine Housekeeping, &c., in-door. —M. Hartington, Coombe-road, Teignmouth.

Lady Dispenser (Hall qualification) desires post with Doctor. Resident. Good references. South or West of England preferred.—Write, giving full particulars to Elsey, 59, Cecile Park, Crouch End, London.

Lady Dispenser (Apoth. Hall), Trained Nurse, experienced, seeks post with Doctor, in or near Portsmouth preferred.—Address, No. 523, THE LANCET Office, 423, Strand, W.C. 2.

Required by Lady, post in Doctor's family as COMPANION-HELP, where some knowledge of dispensing and medical bookkeeping would be useful. Disengaged now.—Address, No. 522, THE LANCET Office, 423, Strand, W.C. 2.

Officer, 26, invalided, Public School, Dulwich College, requires position as CHAUFFEUR to a doctor with a country practice South-West Coast of England (Bournemouth district preferred).—Address, No. 521, THE LANCET Office, 423, Strand, W.C. 2.

Expert Shorthand Typist, long experience, recently in the employ of the Ministry of Munitions, good testimonials, desires appointment as SECRETARY in the house of West-End Physician or in Medical Institution.—Apply, Marshall, 23, Regent's Park-road, Gloucester Gate, N.W. 1.

Herts.—A Partner required in a General Practice situated in a Country Town. Receipts for 1916 nearly £1600. Panel List 1250. Fees 2s. 6d. to 21s. Ample scope. Rent of house £50 per annum. Premium for Half Share, £750.—Quote Folio 960, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Partner wanted in a good-class very old-established General Country Practice in West County. Income over £1800 a year. Poor Law, Panel, and other appointments. Mainly agricultural and rising district. Plenty of scope for increase. Good educational facilities. An excellent opportunity for a young and energetic man (ineligible).—Further particulars, apply No. 6193, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Required at once, Cash and Panel PRACTICE in or near London. Principal now free to negotiate. Send full details in confidence to Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St Bartholomew's Hospital.

Wanted, Private and Panel Practice in or near London or Provincial Town. Receipts should be £700 a year or more. Premium moderate. Purchaser can negotiate at once. Particulars received in confidence.—Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge whatever unless sale effected.)

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with thirty-six years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are Sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

London, W. — A Non-Dispensing PRACTICE, situated in a good district, and producing well over £1400 per annum. Fees 5s. upwards. Premium one year's purchase or near reasonable offer.—Quote Folio 1008, Arnold & Sons. Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

North Wales Coast.—Over £400 a year, formerly larger. Residential locality on rail. Fees 2s. 6d. to 21s. Good house; rent £40. Easily worked. Hunting, fishing, &c. Premium about one year's purchase.—Apply, No. 6195, care of Mr. Percival Turner, 4, Adam street, Strand, W.C. 2.

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Thirty-six years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C.2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

For Disposal, Practices or Partnerships.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

City Practice for disposal, offering great scope by more attendance. At present about £200 a year, excluding a small panel. Rent moderate. —Apply to 6209, care of Mr. Percival Turner, 4, Adam-street, Strand, London, W.C.2.

London, N.—Cash and Panel Practice situated in a thickly populated district and producing about £800 per annum. Panel list 1600. Fees up to 3s. 6d. House situated in main thoroughfare; rent £35 per annum. Premium £500. —Quote Folio 1011, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Country Practice.—£500 a year, great scope, near good Town in Lincolnshire. Panel £200. Large house and garden. Fruit-growing district. Vendor retiring. Price only £275 —Apply, No. 6171, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

Kent.—An old-established Practice, situated in a large country town, and producing about £1400 per annum. Panel list 1200. Fees up to 5s. Several appointments held, value about £75 per annum. The house is situated in the main street, at a rental of £55 per annum. Premium £1400.—Quote Folio 1006, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Over £800 a year.—Hospital Town, within 100 miles.—Panel nearly 1000. Good corner house in Residential district. Fees from 2s 6d. upwards. Great scope. Partnership introduction long as desired. Personally visited and investigated. Premium about £700.—Apply, No. 6183, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Death Vacancy.—Lancs.—An old-established PRACTICE situated in an Industrial District and producing about £1000 per annum. Panel list about 1500. Fees up to 2s. 6d. Several small appointments held. Rent of house, &c., £55 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 746, Arnold and Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

West of England.—£1000 a year.— Unopposed for many miles. Station close. Ill-health necessitates sale. Good residential district. Appointments nearly £200, and panel of 650 at 9s. Large house and garden; rent £55 All kinds of sport. Very little night work.—Apply, No. 6206, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Yorks.—An old-established Practice situated in an Industrial Town and producing about £600 per annum. Panel list nearly 400. Fees 2s. to 5s. Small appointment held worth £40 per annum. Excellent house in commanding position and containing five bedrooms, &c.; rent £45 per annum. Premium for quick sale, £350.—Quote Folio 963, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

£1000 a year.— Very Urgent.— Within an hour of London. Town of 40,000. No panel. Parish, &c., over £200 a year. Fees 2s. to 3s. 6d. Midwifery: none under £3 3s. Small house, with garden; rent £40. Illness cause of sale. Price about one year's purchase, part by instalments.—Apply, No. 6201, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

S.E. Coast.—An old-established lock-up PRACTICE, situated in a good district, and producing over £700 per annum. Very small Panel. Fees 2s. 6d. to 10s. 6d. Rent £35 per annum. Ample scope for increase. Premium one year's purchase, payable £200 down and the balance by instalments, spread over a period of two years.—For further particulars quote Folio 1010, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Urgent Sale.—Easy Terms.—Within 100 miles.—Unopposed County PRACTICE of £450 a year and scope. Vendor selling through illness. Appointments and panel worth £250. Good detached house, large garden, tennis lawn, orchard, &c.; rent £40. Sandy soil. Easily worked. Rail close. Premium £400, part by instalments.—Apply, No. 6127, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C.2.

Death Vacancy.—Within 70 miles, in thriving Manufacturing Town of over 90,000. Income about £600. Panel 1000, and many better-class patients. Good house and large garden; rent £50. Established twenty-four years. Locum in charge. Will be sold for first reasonable offer.—Apply, No. 6202, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C.2.

Southern County.—About £600 a year. — Old-established unopposed PRACTICE. Residential Country Town on rail within 100 miles. Union appointment £12. Panel about 600 at 9s. Good house and garden, tennis lawn, &c. Easily worked. Great scope. Hunting district. Vendor retiring.—Apply, No. 6140, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C.2.

Belgravia.—For disposal, the valuable LEASE of PREMISES where a high-class Practice of nearly £3000 a year has been carried on for many years. — Apply, in first instance, to 6179, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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Nottingham General Hospital.— Wanted, a CASUALTY HOUSE SURGEON (Medical Woman). She will be appointed for six months. Duties to commence on the 1st of December, 1917. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 8th of November. By order.
E. M. KEELY, Secretary.

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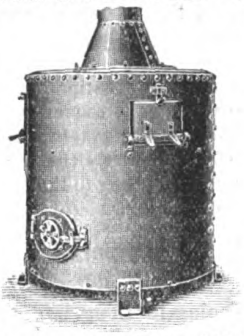
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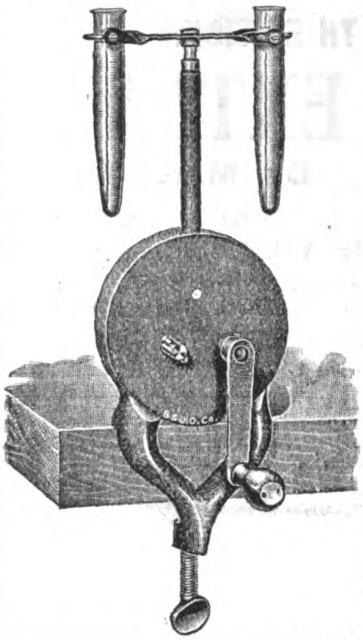
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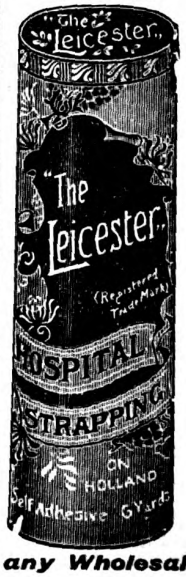
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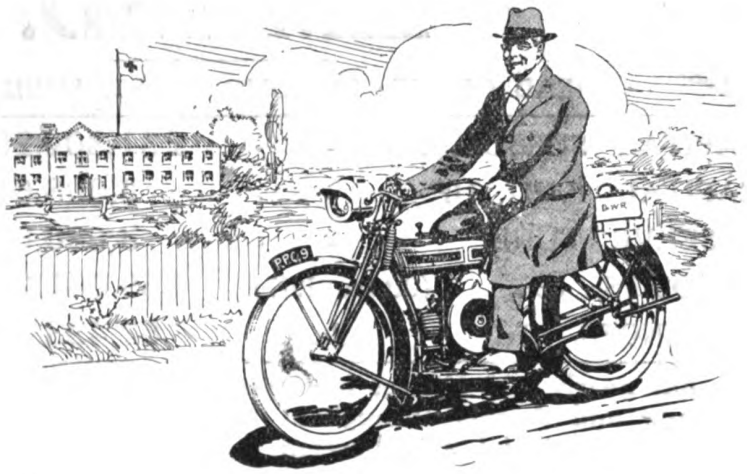
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Each c.c. contains:—

Micrococcus catarrhalis	100 millions
B. pneumoniæ (Friedländer) ...	100 millions
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Staphylococcus	500 millions
Bacillus septus (diphtheroid)...	50 millions
Bacillus influenzæ	300 millions
Parodontal streptococcus ...	12 millions

This vaccine is adapted for the preventive inoculation of individuals who suffer from recurring "colds," in cases in which a complete bacteriological investigation is not convenient, and in cases where there is some general diminution in resistance, indicated by the patient becoming infected by any one of the several microbes which may cause these catarrhs. It is not intended to replace an autogenous vaccine in the case of patients who are subject to the periodic lighting up of a chronic infection by some one microbe.

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It is indicated in various cardiopathies, arterio-sclerosis, and in the cardiac debility of acute disease.

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Complete Internal and External Antisepsis.

With the advance of scientific bacteriology the necessity of a satisfactory antiseptic for internal use becomes daily more apparent and more vital to the practitioner as an aid in coping with the many diseases which are now recognised as of micro-organic origin.

Fixed ideas have been accepted for many years past as to the general specifics for certain diseases, quinine in malaria, mercury in syphilis, but the rut has been eliminated to a large extent by experimental work of the last few years, and the war has proved of great help in this direction.

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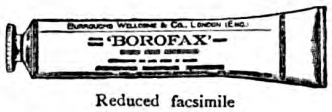
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ANTISEPTIC—contains Mercury Oxycyanide 1-1000. NON-GREASY—water washes it off. NON-IRRITATING and NON-CORROSIVE—ideal for the surgeon's hands, instruments and appliances.



Figure of an ancient Siamese-Cambodian warrior of high rank fighting with bow and arrows from his chariot, drawn at the gallop by two spirited horses. He grasps the arrow between the straight thumb and almost straight finger, aided by the second, a fashion characteristic of Siam and known as the "tertiary arrow release." The charioteer kneels at present on the backs of the horses, but on occasion one knee rests upon a horse, while the other leg is outstretched backwards resting upon the floor of the chariot itself. The Siamese have always been famed for their skill in the construction and decoration of chariots, the wheels of which were of the finest workmanship. Date, A.D. 1100-1200.



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0·5 gm.	,, ,,	*2/0*	,,	*6/0* ,,

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gr. 2	*bottles of 25,*	*6d.*	*and 100,*	*1/6 per bottle*
gr. 5	,, ,,	*7d.*	,,	*1/9* ,,
0·1 gm.	,, ,,	*6d.*	,,	,,
0·25 gm.	,, ,,	*7d.*	,,	*1/9* ,,

'TABLOID' BRAND **Phenacetin**
(Trade Mark)

gr. 1	*bottles of 25,*	*8d.*	*and 100,*	*2/0 per bottle*
gr. 5	,, ,,	*2/6*	,,	*8/9* ,,
0·1 gm.	,, ,,	*8d.*	,,	*2/0* ,,
0·25 gm.	,, ,,	*2/3*	,,	*8/0* ,,
0·5 gm.	,, ,,	*3/9*	,,	*13/0* ,,

'TABLOID' BRAND **Sodium Salicylate**
(Trade Mark)

gr. 3	*bottles of 25,*	*7d.*	*and 100,*	*1/9 per bottle*
gr. 5	,, ,,	*8d.*	,,	*2/0* ,,
0·5 gm.	,, ,,	*10*	,,	*3/0* ,,
1 gm.	,, ,,	*1/8*	,,	,,

BEWARE of Talc in TABLETS



Examples of high and probably injurious percentages of talc found in tablets, vide Lancet, May 26, 1917, page 909.

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The ancient Siamese had for part-ancestors the remarkably civilized Khmer race, from whose bas-reliefs the accompanying warriors are reproduced. The first on the left is armed with a club and wears a demon's head mask. The second has just let fly an arrow, while the third has a hatchet and wears a fantastic mask in the form of an animal's head. The ancient Siamese probably borrowed the custom of wearing masks in warfare from the Chinese, who fashioned the most terrifying visages. Date, A.D. 1100-1200.

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[See also pages 24, 25, & 40.

Experiences IN THE USE OF NITROUS OXIDE AND OXYGEN WITH REBREATHING IN MILITARY SURGERY.

A Paper read before the Medical Society of London on Oct. 29th, 1917,

BY H. EDMUND G. BOYLE, M.R.C.S., L.R.C.P. LOND.,

CAPTAIN, R.A.M.C.(T.); ANÆSTHETIST TO ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—The anæsthesia produced by the combination of nitrous oxide and oxygen with rebreathing, and ether, or chloroform and ether when necessary, is one that should appeal to anyone who has the interests and welfare of his patients at heart. The easy induction, the rapid and comfortable recovery are factors that all men who are interested in anæsthesia will at once appreciate. This method of anæsthesia has been largely employed in the U.S.A., and it has been written about and papers have been read before the Section of Anæsthetics of the Royal Society of Medicine by Chaldicott, Page, and Flemming.

My own interest in the matter is due entirely to Dr. James T. Gwathmey, of New York, whom I met at the Congress in 1912. He persuaded me to get a machine and try for myself, and I have not regretted it. Gwathmey, as most of you know, is one of the greatest authorities on anæsthesia in the United States, and it has been my privilege and pleasure to have him by me whilst I have been working at the 1st London General Hospital.

The anæsthesia and the technique that I shall attempt to describe is what I have been using at the 1st London General Hospital. To begin with, the patients are given a preliminary injection of morphia, atropine, and scopolamine about half an hour before the time of operation. I think that half an hour is sufficient to enable one to get the full value of the injection during the anæsthesia. Of course, it is not always possible to be sure that half an hour has elapsed before starting the anæsthesia, for it is obvious that in a busy morning of 12 to 15 cases it is at times difficult for the sisters to estimate correctly the exact time at which any one case will get to the theatre. I know that I have anæsthetised patients who had only just had the injection, and patients who had had it an hour or more beforehand. The proportions of the injection that I use are: morphia tartrate, 1/6 gr.; atropine sulphate, 1/120 gr.; scopolamine, 1/100 gr. This is made up so that 10 minims is the dose. We found when this was made up in bulk for hospital use that unless the injection was used at once it became flocculent, so our dispenser added one drop of pure carbolic to 4 oz. of the mixture, and we find that this acts as a preservative, so that the ward supply does not become flocculent and can be used until the bottle is empty. I do not know whether the small amount of carbolic added has any effect on the anæsthesia—one can hardly imagine that it does, since it is such a minute quantity—1 drop to 4 oz. and the dose of the mixture 5 minims.

The apparatus that I use is Gwathmey's, and consists, as you see, of four cylinders, two N_2O and two O. The supply of N_2O and O is controlled by means of two graduated taps, which permit the gases to flow through the glass bottle containing water in a proportion that can be seen, so that one has visual evidence of how much of each gas is being inhaled by the patient. The gases may go direct to the patient via the rebreathing bag, or may be directed through a bottle containing either ether or chloroform and ether, or both mixture as the administrator chooses to place there. The face-piece has at its top a valve to permit a certain amount of intake and output of air and mixed gases, but in actual practice one does not use this valve a great deal except in those patients who will not stand prolonged rebreathing, on account of attempts at vomiting during anæsthesia.

TECHNIQUE OF ADMINISTRATION.

One of the most important factors in the production of good anæsthesia is that during the induction the room should be absolutely quiet. And I would here say that there is not enough attention paid to this point by the vast majority of surgeons, anæsthetists, and nurses. During an induction the patient's hearing is at its acutest, and it is, to say the least of it, not encouraging to the patient who—for him—is going through one of the ordeals of his life, to hear the surgeon discussing some matter totally irrelevant to the occasion, whilst in all probability the nurse or somebody is busy clattering bowls and generally making a noise and babel. There should be absolute quiet whenever a patient is being anæsthetised. This condition, great as I know the importance of it to be, is well-nigh impossible at a base hospital, as those of us who work there well know, but it can be ensured even there, and in private practice we ought to insist on it.

Position on the Table.

Gwathmey lays great stress on the importance of having the patient absolutely flat, without even a small pillow, alleging that he finds that breathing is better. My own experience leads me to think that patients as a rule do not like their heads quite so low as Gwathmey would have them, and my usual practice is to have the head slightly raised during the induction, and when anæsthesia is complete I gently lower the head to the horizontal.

Mouth Prop.

I frequently insert a small dental prop between the teeth before starting the anæsthesia. It is my routine to do this when I am giving gas and ether with a Clover, for I have found that it makes induction easier and quieter. With gas and oxygen, however, it does not appear to be so generally necessary as with gas and ether; but the point to be careful about is to observe whether the patient breathes easily through the nose, and if he does not, or if the nose is a narrow one, with very thin alæ nasi, then I always insert a prop. I have found that patients who have these thin alæ nasi will give trouble unless a prop is inserted. The alæ are drawn in towards the septum and the patient makes violent efforts to breathe, but gets nothing or next to nothing into his lungs. I have observed that when this happens the patient becomes pale, with a bluish tint around the mouth, the pupils dilate, and sweating comes on. Treatment for this condition is to open the mouth and get air and oxygen into the lungs.

ADMINISTRATION.

The bag is three-parts filled with N_2O and O in the proportion of 4 to 1; that is to say, oxygen is allowed to bubble through one hole and nitrous oxide through four. The face-piece is adjusted to the face and the gas-valve turned on. And here let me say that the face-piece must fit accurately. If air is allowed to get in at the sides the even course of the anæsthesia will be greatly hampered, and there will be a period of excitement and struggling. The valve at the top of the face-piece is kept open for a few breaths and then turned off, so that rebreathing starts almost from the beginning. The supply of nitrous oxide is now increased until it is flowing in freely through all the apertures and even through the tube itself. I do this to lessen the period of induction, for I hold strongly that the period of induction ought always to be as short as possible—seeing that it is the most unpleasant. In a very short time the patient's breathing grows deeper and more regular until eventually in about three to four minutes it takes on that *automatic rhythm* which is such a constant sign of anæsthesia.

It is necessary to keep a strict watch on the patient's colour, and any degree of cyanosis must at once be remedied by the addition of a little oxygen. It is remarkable how readily these patients respond to oxygen, so much so that only a very little is needed to change the colour back to pink. In my early cases I did not realise this fully and gave oxygen until the pink colour returned, and in consequence in a few cases I very nearly brought my patient out of the anæsthetic state. I now find that it only needs a short sharp turn of the oxygen valve which opens three or four holes for about two seconds.

As soon as anæsthesia has been attained the amount of nitrous oxide coming over is reduced to 4, the oxygen being at 1. With this rate most patients will go on perfectly well

and rebreathing can be continued most of the time. If, however, the patient begins to retch or vomit then I think that there is too much rebreathing and one opens the valve on the face-piece and increases the supply of both oxygen and nitrous oxide.

If it is required to deepen the anæsthesia the pressure in the bag must be increased until when an expiration takes place the bag becomes taut. This will deepen the anæsthesia in a few seconds, but the patient needs careful watching lest he get blue.

Page[1] prefers to give ether to deepen the anæsthesia rather than to push the N_2O under pressure, and on the whole I agree with him.

The signs of overdosage are first of all noisy and stertorous breathing, followed by twitchings of the muscles and accompanied by cyanosis. None of these signs ought to occur in a well-given anæsthetic. The remedy, of course, is more oxygen.

The aim of the administrator should be to get an even anæsthesia, and this is best obtained by being quite sure that the true state of anæsthesia is present before the operator starts, and then keeping the supply of gases at as constant a level as is possible. *Anxious movements of the supply taps only lead to bad anæsthesia.* In this, as with other methods of anæsthesia, the importance of the open and free airway must never be forgotten.

Ether or Mixture.

It sometimes becomes necessary to add either ether or C.E. mixture to the gas and oxygen in cases where extra relaxation of the muscles is required, or during amputations when the nerves are being severed. And here let me say that I have observed that when large nerves are cut in nearly every case the patient moved unless he was being given ether or C.E. This movement does not appear to do any harm, but is troublesome for the operator. Occasionally, if one is having a little difficulty during the induction in obtaining anæsthesia, I find that the addition of ether for a few seconds is frequently enough to produce the required state, but one must be careful not to keep the ether on for long, as this causes coughing and holding of the breath. Just turn it on and off, the whole movement taking about two seconds, and repeat this at intervals of one to two minutes until anæsthesia is complete. Page, in his paper on this subject, says: "The addition of ether during induction makes the administration easier all through even when none is added afterwards." I have seldom found it necessary to give ether or mixture continuously for long—three to four minutes being probably as long as it is ever necessary.

I am not at present prepared to make any definite statement as to the relative values of ether or chloroform and ether with this method, and have up to the present only added chloroform when I have come across some especially burly or alcoholic patient who needed something more potent than ether alone. I find on going through my cases that 38 per cent. have had ether or chloroform and ether.

Regulation of Rebreathing.

On this point Gwathmey in his book on "Anæsthesia," p. 166, says—

"For an even anæsthesia and as an aid to the avoidance of surgical shock a certain amount of rebreathing is of benefit; approximately the rate of flow of the gases should be such that from a quarter to a half of the volume of each respiration is of freshly added gas mixture. Such a proportion reduces to within reasonable limits the expense of gas-oxygen anæsthesia. Too much rebreathing is apt to be followed by post-operative discomfort, usually in the form of headache, and it may cause an increase of post-operative nausea and vomiting. Vomiting during the progress of the anæsthesia is often an indication of excessive rebreathing for that particular patient, although in comparison with other patients it may not appear excessive. At all events, increasing the volume per minute of the gas mixture frequently clears up the symptoms. Our observations on the effect of rebreathing, so far as they go, agree clinically with the laboratory findings of Henderson. Our observations of the blood pressure under nitrous oxide-oxygen (ether) anæsthesia is that there is a distinct rise, not only at the commencement but also throughout the operation."

For my own part, the observations that I have so far made completely confirm Gwathmey's views on this important point—important, because I consider it to be one of the most essential features of the method. Those of us who were in the habit of giving prolonged nitrous oxide and oxygen with a Hewitt's apparatus know that it was a wasteful method, wasteful of the gases, but, what is more important still, wasteful of the patient's energies. A long nitrous oxide and oxygen without rebreathing frequently left the patient in a very exhausted state. They often had profuse sweatings, and in a good many instances patients were far from well for some hours afterwards. With regulated rebreathing, however, this is not the case. The patients keep a good colour and their temperature is, if anything, slightly raised, and there should be no sweating. The temperature of the expired air as felt when the valve at the top of the face-piece is opened is warm to the hand. I have not thought it of sufficient importance to have this air analysed or to record its temperature.

Overdose.

On this point I feel that I cannot do better than quote to you Gwathmey's own words:—

"Surgical anæsthesia is never obtained when the patient appears in the least degree cyanotic on account of asphyxial spasm and rigidity. On the contrary, the *patient must always be pink.* Any anæsthesia accompanied by cyanosis is dangerous."

"The symptoms of an overdose of nitrous oxide in the presence of sufficient oxygen to keep the patient pink is, first, stertorous respiration, and second, the onset of an excessive secretion of mucus. Unless the percentage of nitrous oxide is then decreased, the patient's face and hands take on a death-like pallor (not cyanotic). There is an absolute loss of all the facial reflexes; the respirations become shallow and probably the blood pressure falls (that is, the temporal cannot be found so readily although the rate is not excessive). This condition, if pushed, would probably lead to death from paralysis of the respiratory centre, though we know of no experimental evidence to support the hypothesis."

The treatment for overdose is rapidly to remove the mask and start artificial respiration together with the administration of oxygen, remembering always to keep the airway clear.

POST-OPERATIVE CONDITION.

The post-operative condition of patients who have been anæsthetised with nitrous oxide and oxygen with rebreathing and with a little ether when necessary, is to me one of the most striking points of the method. The patients are conscious within two or three minutes of the removal of the anæsthetic, and in the majority of cases are not sick. At the 1st London General Hospital I have had records kept of consecutive cases, and the result is that of 200 consecutive cases 13 were sick once, 4 twice, and 3 had prolonged sickness (i.e., 2 most of the night and 1 for 2 days).

There is in a fair proportion of cases a feeling of nausea which lasts for about 20 minutes, and occasionally there is some headache, which is probably due to too much rebreathing for the particular patient, but beyond that the recovery is perfect. There is no horrible taste of ether in the mouth, no waves of ether vapour coming over as the patient eliminates the drug. And this holds good, even if a little ether has been given during the early stages of the anæsthetic.

One of my most striking cases was an officer who had had the semilunar cartilage removed; the operation lasted about 40 minutes, and finished at 5.30 P.M. At 7.30 P.M. he enjoyed a full dinner, a result that I think is unobtainable with the older methods.

Since both of the gases are non-toxic it follows that this combination is especially suited to those cases of which we have all seen such a number—the badly wounded and septic man. These cases do particularly well, and at the 1st London General Hospital we have records of three cases of amputation at the hip in men who were profoundly septic and who have all done splendidly.

I wish that I were possessed of sufficient power of oratory to paint you a real word-picture of the after-condition of the patients, but, alas, I am unable to do it justice. For a proper appreciation of the condition one should see the operation and the patients afterwards. There is one point, however, that I should like to bring before you as a result of my analysis of 200 consecutive cases at the 1st London General Hospital. It is that I observe that in most of the cases there is no appreciable rise in temperature after the operation. We are most of us familiar with the rise of

[1] H. M. Page: Royal Society of Medicine, February, 1913.

emperature as shown on the temperature charts after an peration. This does not appear to be the case after an dministration with this combination.

At Queen Alexandra's Hospital for Officers at Highgate, here I have used this method extensively, Mr. H. J. aterson—who is in charge of the hospital—has observed nd commented on the fact that there is no rise in tempera- ure after this anæsthetic, and I hope that he will tell us he results so far as the officers under his charge are con- erned. The temperature remains steady when clean cases re being dealt with, and even in septic ones I find that the ise is not as great as with other anæsthetics.

SUMMARY OF CASES.

Administered by H. E. G. Boyle	550
,, ,, J. F. Trewby and residents at 1st London General Hospital	161
Total	711

Of these, 5 have had bronchitis, and 1 of these five has had light broncho-pneumonia.

Of the 550 cases administered by H. E. G. B., 38 per cent. ave had either ether or C.E. mixture (2 have had $CHCl_3$ lone).

Fatal cases ... ... Nil.

Analysis of 200 *Consecutive Cases at 1st London General Hospital.*

	During	After	
Vomiting	1	20	Once ... ... 13 Twice ... ... 4 Bad vomiting: 2 most of the night, 1 for 2 days 3

Thus only 1·5 % had what could be termed "bad" omiting.

Temperature: Highest rise 101°–105° (drainage of buttock). verage rise 0·9 of a degree.

3 men complained of pain (all of them were bone cases).

2 men said that they preferred to come round 2–3 hours fter operation.

1 appendix. $CHCl_3$ added for relaxation, but this was not ood.

1 hæmorrhoids. C.E. added, but was difficult to keep uiet.

1 amputation above ankle required 1 oz. of ether. (This is ie largest amount of ether that any of the 200 cases have ad.)

LIMITATIONS OF THE ANÆSTHETIC.

It must not for a moment be thought that this combina- on of anæsthetics is suitable for all cases. It is not, but it rms a most useful addition to our armamentarium as næsthetists.

I think it will be easier if I give you the type of opera- on in which, at any rate in my hands, the method is suited.

1. Cases when *absolute* relaxation is required all the ne.

2. Some abdominal cases—e.g., gall-bladder operations. iese can be done, but unless the surgeon is prepared to ake a large incision and to inject the muscles with some algesic mixture the operative procedure will be very fficult. And this holds good to a lesser extent for ppendix operations, but here it is quite possible to do em if the surgeon is going through the muscles over cBurney's point, but if he prefer to go behind the rectus en, unless there is to be injection of the muscles, I would t advise gas and oxygen from the point of view of the rgeon's comfort.

3. So far I have not done much with intra-oral cases, but e few that I have done have been fairly successful. rathmey, however, assures me that he has perfected a chnique for tonsils and adenoids, and I hope soon to try it myself.

I have used this combination in a large variety of cases; e list includes, amongst others, such cases as: amputation breast, hernia, varicocele, varicose veins, trephining, unds in neck, appendicectomy, hysterectomy, gall-bladder, bstate, and various others, including, of course, the many ses of wounded officers and men and their numerous ments.

CONSUMPTION OF GASES.

I find that 200 gallons of nitrous oxide and 60 gallons of ygen are sufficient to last for 2½ hours under ordinary cumstances. I have, of course, done better and also worse than that; but in my experience that amount is about the average. The longest case that I have so far administered the combination for lasted 2¾ hours.

Nursing Point of View.

The work of the nurses is considerably lessened when this combination is employed, for it is obvious that if on the return to the ward the patient is conscious and not vomiting he does not need the undivided attention of a skilled nurse. And this point is of extreme importance in a large military hospital, since it often happens that 8 or 10 operations may be all from the same ward during a morning's work. The contrast between 8–10 semi-conscious and probably vomiting patients and 8–10 men who are conscious and not sick is one that appeals greatly to an overworked nursing staff.

I have been at some pains to discover the opinion of the sisters and nurses with regard to their patients after this anæsthetic, and from inquiries which I have made at the various private hospitals for officers to which I am attached, as well as at St. Bartholomew's and the 1st London General Hospital, the consensus of opinion is that they much prefer to have their patients given gas and oxygen to anything else.

CONCLUSION.

In conclusion, let me say that my reasons for bringing this matter forward are because I am quite convinced that it is an advance on the older methods of anæsthesia and, from the patient's point of view, it is infinitely a better form of anæsthetic than ether or chloroform; for after this combination the recovery in the great majority of cases is devoid of those unpleasant and distressing conditions with which most of you are familiar.

This paper, then, may be taken as an attempt to procure a more extended use of gas and oxygen with regulated rebreathing in major surgical procedures, and especially in the treatment of our wounded.

My own experience of this method with our wounded men has been confined to work at the 1st London General Hospital and to various hospitals for officers in London, and I unhesitatingly say that in my opinion the combination of anæsthetics which I have attempted to describe is infinitely better for most of the men than ether, chloroform, or mixtures thereof. Of conditions at the front I cannot speak with such certainty, as I have, unfortunately, not been there, but it appears to me that it would be of considerable advantage out there if after most of the operations the patients were conscious within a few minutes. It would lessen the work of the orderlies and nurses, and, apart from this aspect of the matter, we must remember that this anæsthetic is non-toxic, and therefore there is less strain put on to the patient, seeing that he does not have to eliminate the drug, be it ether or chloroform, from his system. Moreover, there is no shock after gas and oxygen.

Finally, let me give one word of warning. This combination of anæsthetics is not one to place in the hands of the careless or inexpert—it requires skilful administration, and if used carelessly will inevitably lead to disasters.

HOSPITAL SUNDAY AT EXETER.—Hospital Sunday was held at Exeter on Oct. 21st. There was a special service at the Cathedral, when the staff, committee, and governors of the Royal Devon and Exeter Hospital attended. The mayor and corporation and representatives of other public bodies were present. The preacher, Rev. Prebendary F. Buckingham, made a strong appeal for funds to reduce the deficiency between the income and expenditure of the hospital, which is about £2200.

THE NATIONAL MEDICAL UNION.—At a meeting of the council of the National Medical Union, held at 346, Strand, London, on Oct. 19th, Mr. V. T. Greenyer, F.R.C.S., presiding, the following resolutions were unanimously passed:—

1. The National Medical Union advises its members and all other non-panel medical practitioners to refrain from attending discharged disabled soldiers and sailors under "the special arrangements" of the Insurance Commissioners, but encourages treatment in their private professional capacity.

2. The National Medical Union regrets that it has been considered necessary to replace British medical men capable and desirous of retaining their appointments in the war hospitals by foreigners holding foreign qualifications.

3. The council of the National Medical Union deprecates that section of the General Order of the Local Government Board, which instructs and allows the diagnosis and notification of measles and German measles by the lay public.

Observations
ON
CIRCULATORY INEFFICIENCY,
WITH SPECIAL REFERENCE TO THE NERVOUS FACTOR.

BY E. B. GUNSON, M.D. EDIN., M.R.C.P. LOND.,
CAPTAIN, R.A.M.C.

THE maintenance of an efficient circulation is dependent upon the efficient working of all the factors which comprise the circulatory mechanism. Disturbance of any one of these leads to a disturbance of the circulation resulting in inefficiency. While it is true that certain parts of the mechanism are more vital than others, the difference is one of degree only, and it is possible that owing to the less obvious nature of the disturbance resulting under certain conditions the importance of the underlying cause may be minimised or altogether overlooked. The present observations are largely based upon a clinical study of the nervous and circulatory phenomena occurring in diphtheria and dysentery.

CIRCULATORY INEFFICIENCY IN DIPHTHERIA.

Two distinct types of inefficiency were met with. The one is always preceded by the onset of arrhythmia and has long been attributed to a state of "cardiac paralysis." In the second form a normal rhythm is maintained even in fatal cases.

The clinical features in these two conditions are quite distinct and in striking contrast, and may be taken to illustrate the fundamental difference in two common types of circulatory inefficiency.

In 20 cases presenting severe symptoms of circulatory failure polygraphic records were obtained daily; a much larger number of cases was observed from time to time. Of the cases graphically investigated eight were reported in a previous communication.[2]

Clinical classification.—A. Cases which maintain a normal rhythm: vascular type. B. Cases which develop a marked arrhythmia with rapid pulse, and in which paroxysms of regular tachycardia may occur: cardiac type.

Symptomatology.

A. These cases, usually fatal within the first ten days of the disease, present the appearance of profound exhaustion. The pulse remains regular, but soon becomes enfeebled and frequently disappears entirely from the wrist. There develops an ashen pallor of the face. The extremities become cold and clammy, and in the late stages cyanosed. The heart continues to act strongly till within a few hours of death. Increase in liver dullness is slight or entirely absent, and dilatation of the heart is of late onset and of moderate degree only. Consciousness is retained throughout, although apathy is marked, and death is usually preceded by a convulsion. The sequence of events points to a primary failure of the peripheral circulation leading to venous stasis and engorgement with subsequent embarrassment of the heart. The terminal convulsion is attributed to cerebral congestion.

Subcutaneous, subepicardial, subperitoneal, gastric submucous hæmorrhages and purpuric eruptions are very frequently present in these cases and testify to the severity of the blood infection and involvement of the capillaries.

Case 1 of the present series and Cases 6, 7, and 8 previously reported[2] are examples of this type of circulatory failure.

B. These cases are examples of "cardiac paralysis," a syndrome including marked cardiac arrhythmia, increase in cardiac and liver dullness, and triple rhythm on auscultation. The pulse remains of comparatively good strength till the arrhythmia has persisted for several hours at least. Congestion of the lungs is absent except as an occasional terminal result. The sequence of events is very definite in marked cases, and is well illustrated by the state of the circulation in Case 2 on the thirty-second day of disease. The onset of arrhythmia was accompanied by unusual mental excitement and was shortly followed by increase in cardiac and liver dullness with physical and mental exhaustion. Gradual enfeeblement of the pulse followed, and such other signs of cardiac failure as dyspnœa, cyanosis, and coldness of the extremities, with, however, no sign of pulmonary congestion.

The onset of the marked arrhythmia due usually to the presence of frequent premature contractions, and often associated with paroxysms of regular tachycardia, occurs usually early in the third week, but it may be preceded for some days by a slight arrhythmia due to the presence of an occasional premature contraction. Such cases rally repeatedly and may make a complete recovery. In fatal cases marked signs of circulatory failure are frequently wanting at the time of death, which is due to failure of respiration, to which a diaphragmatic palsy or broncho-pneumonia may be contributory.

Nervous System.

The changes in the central nervous system which occurred in these cases and the reflex and other phenomena—e.g., paralyses, have been described elsewhere.[4] The severe cases all developed extensive paralysis involving limb muscles, palate, and diaphragm. They presented, among other reflex changes, a crossed leg reflex, which is held to indicate a definite spinal cord lesion, a point to which one would draw special attention.

The oculo-cardiac reflex was investigated[5] and found to be absent during the period of disturbed heart action, returning in cases which recovered, as the cardiac state became normal.

Pathology.

The following description of the histological changes in diphtheria, exhaustively investigated by many workers, summarises the outstanding features, which are found to be fairly constant in severe cases.

Vagus nerves.—Hibbard[6] found that the vagus nerve in fatal cases of diphtheria always had some evidence of degenerative changes. Mallory[8] confirms these findings.

Medulla oblongata.—Bolton,[1] from an examination of 12 cases which died in the acute toxic stages of diphtheria, found marked fatty degenerative changes in the medulla oblongata. He found no degeneration of the vagi.

Myocardium.—Mallory,[8] in a study of 251 autopsies, found fat in the muscle fibres of the heart in over half the cases; hyaline degeneration, necrosis of the fibres, and interstitial myocarditis were frequent.

Central nervous system.—In a series of 28 cases, selected on account of cardiac symptoms or paralysis or the severity of the disease, Mallory[8] found slight to marked diffuse fatty degeneration in the white substance and nerve fibres of the central nervous system.

Suprarenal glands.—Sergent,[10] in 1902, advanced the theory that many of the symptoms met with in severe cases of diphtheria were due to suprarenal insufficiency.

Moltschanoff,[9] as the result of observations on fatal cases and from animal experiments, states that both in the capsule and medulla of the suprarenal in diphtherial intoxication there is at first an increased reaction on the part of the cells, followed by a reduction or complete loss of function; such loss of function may result either from atrophy of the cellular elements or from marked circulatory disturbances.

In the face of such complex and widespread pathological findings it is clear that no conception of circulatory failure in diphtheria will be complete which does not embrace the possibility of its dependence upon pathological changes not only in the heart muscle and its intrinsic nerve elements but also in the blood-vessels, the medulla oblongata, the vagi, and the sympathetic nervous system, as well as in the suprarenal glands.

DYSENTERY.

Before discussing the nature and significance of circulatory inefficiency, attention is directed to the conditions met with in dysentery, as they have a distinct bearing upon one aspect of the question.

In severe cases of dysentery, including fatal cases, marked signs of circulatory failure were met with in the acute stage. The symptoms in their nature and sequence were strikingly comparable with those described above as occurring in diphtheria in cases which maintain a regular rhythm. The failure of the peripheral circulation was definitely the primary event, to which the other symptoms were subsequent. As these patients became convalescent a large proportion presented persistent symptoms of disordered heart action, in which the vaso-motor disturbances remained

he outstanding feature. No severe arrhythmia was met vith and the second type of circulatory failure was not bserved.

Two factors of extreme importance in their bearing upon he severity and persistence of symptoms in these cases were, irstly, that the men remained on duty for a varying period of lays and even weeks after the onset of dysentery, frequently eporting sick only when completely exhausted; secondly, the resence of a secondary bowel infection associated with econdary pyrexia which persisted for a long period after he primary dysenteric process had subsided.

Other infections.—The same type of circulatory inefficiency s to be observed in many other infections and has been oted by the writer in cases of severe scarlet fever, neumonia (frequently), enteric fever, and infective aundice.

THE NATURE OF CIRCULATORY INEFFICIENCY.

Two types of circulatory inefficiency arising in the course f acute illness and leading by the severity of symptoms to irculatory failure have been described. Differentiation etween these two types is a matter of considerable import- nce, as they stand for two quite different forms of disability nd their study throws considerable light upon the commoner rculatory disorders.

In the first, *the vascular type*, the cardiac rhythm remains ormal and there occurs a primary failure of the *peripheral* rculation with *subsequent* embarrassment of the cardiac tion. The outstanding symptoms are vaso-motor and pend upon a disordered function of the nervous control of e peripheral circulation, the disorder of the suprarenal and playing an important part.

The second, *the cardiac type*, is invariably preceded by the set of a marked arrhythmia due as a rule to frequent emature contractions, with occasional paroxysms of regular chycardia. The degree of circulatory failure may become treme and the sequence of symptoms is the same as that hich follows the onset of auricular fibrillation, the common use of cardiac failure in patients not suffering from acute ness. In both cases the presence of a rapid arrhythmia the important factor, and its persistence determines the gree of inefficiency which results. In diphtheria the ssation of the arrhythmia and the return to slower pulse- e is quickly followed by the disappearance of the signs circulatory failure. The same sequence of events occurs in mporary or paroxysmal cases of auricular fibrillation, where ih the disappearance of the arrhythmia the symptoms ickly subside.

SIGNIFICANCE OF CIRCULATORY INEFFICIENCY.

Vascular type.—When this condition persists owing to the erity of the original disease or to faulty treatment a up of symptoms—exhaustion on exertion, coldness of remities, giddiness, pain and dyspnœa—is established ich may become permanent. In such patients, who ally present an excitable heart's action, the writer, except a few cases, has been unable to demonstrate any definite ex changes, and the further elucidation of the nervous nomena is extremely difficult. The considerable amount vidence available pointing to pathological changes in the rarenal glands in the course of acute diseases furnishes nnecting link in the chain of events which still await lanation.

lore important, however, is the fact that, by early tment and adequate rest in the acute stage and by stence upon a complete recovery, including removal of infective focus, before return to work of all patients ering from infectious diseases, the incidence of dis- ity from circulatory inefficiency may be greatly reduced.

ardiac type.—The chief significance of this type is the ing it has upon the relative importance to be attached he myocardium and the nerve structures, intrinsic and insic, which influence and control the heart's action in th, but especially in disease. They cannot be regarded r than as component parts of a whole. The old gonism between the so-called myogenic and neurogenic eptions of heart action no longer holds. But it is ssary to bear in mind that the interdependent structures be differently affected by different morbid processes consequent diverse results owing to the different tions they subserve.

ring the clinical study of diphtheria the comparison een the effect of the disease upon cardiac muscle with its nerve mechanism, on the one hand, and skeletal muscle and its nerve mechanism, on the other hand, naturally arose. The one, truly, more highly specialised than the other and containing primitive elements neither muscle nor nerve, but both governed by higher centres and liable to be attacked by poisons in the same way. The limb paralyses are admittedly dependent chiefly upon lesions of the nervous elements, and the writer has advanced evidence elsewhere [1] in support of the view that the central nervous system, and not the peripheral nerves, is mainly at fault. It is impossible, on account of the widespread nature of the pathological lesions in diphtheria, to assert on histological grounds that one structure is more at fault than another, and clinical observations become, therefore, the more important; they are strongly in favour of the view that the chief factor in circulatory inefficiency in diphtheria is disordered action of the controlling nerve elements and not myocardial deficiency, thus bringing "cardiac paralysis" into line with the paralyses of skeletal muscles. In its wider bearing the conception is not contrary to observed clinical facts. The extrasystole has long been regarded by Mackenzie as the unit of arrhythmia, and it is generally conceded that auricular fibrillation, auricular flutter, and other forms of paroxysmal tachycardia are allied disorders, the true explanation of which depends upon the understanding of the extrasystole.

The chief of these arrhythmias, however, auricular fibrillation, is described in terms of a disordered muscle, to the exclusion of the nervous mechanism. Although any degeneration of the myocardium reduces the efficiency of the heart muscle, the result of hypertrophy is such that an efficient circulation may be permanently maintained in spite of very considerable myocardial degeneration so long as no severe arrhythmia supervene. While the intrinsic cardiac nerves, and especially the Purkinje system and nodal structures, have been proven mainly to be at fault in the production of arrhythmia, much clinical evidence points to the necessity for investigation also of the extrinsic nervous structures, and the morbid processes which particularly affect them, in order to arrive at a more complete understanding of all the factors which influence the inception of cardiac arrhythmia.

ILLUSTRATIVE CASES.

CASE 1. "*Vascular paralysis*"; *acute toxæmia; purpura; regular rhythm; death.*—A boy, aged 5 years, admitted on the sixth day of disease suffering from very severe faucial diphtheria. 20,000 units of antitoxin were administered intramuscularly and 16,000 units were given on the following day. On the morning of the seventh day the patient was pale and very quiet. There was considerable œdema of the tissues of the neck; a purpuric rash and some subcutaneous hæmorrhages were present on the limbs. The extremities were cold and clammy. The pulse was regular but extremely feeble. Cardiac dullness was not increased, and clear first and second sounds were present in all areas. Liver dullness extended 1 inch below the costal margin. The temperature was 98° F. At 3.30 P.M. there was slight cyanosis and the patient was restless. Cardiac dullness now extended 1½ inches to the right of mid-line; first and second sounds were still present; liver dullness was unchanged. The lungs were clear. A polygraphic tracing, obtained with great difficulty owing to the extreme feebleness of the pulse, showed a pulse-rate of 120 per minute, a normal A-C interval, and slight sinus arrhythmia. The respirations were 30 per minute. During the evening the patient became very restless; the pulse was almost imperceptible at the wrist; the temperature dropped to 97° F. Consciousness was retained until 2.20 A.M. on the eighth day, when a convulsion occurred and was immediately followed by death.

Post mortem, subepicardial, subperitoneal, and gastric submucous hæmorrhages were present. The right heart, especially the right auricle, was dilated. The heart muscle was pale. The suprarenal glands were congested, but presented no other naked-eye change.

CASE 2. "*Cardiac paralysis*"; *frequent premature contractions, simulating auricular fibrillation; paroxysmal tachycardia; death.*—Female, aged 4 years, admitted on the eighth day of disease. A positive culture had been obtained. The throat was clean. 8000 units of antitoxin were administered intramuscularly. On the eighteenth day palatal palsy developed. The pulse, which was of good strength, became feeble and irregular, the irregularity being due to frequent premature contractions of uncertain nature, occurring singly and in pairs, rate 90 per minute. Cardiac dullness extended 1 inch to the right of the mid-line and 1 inch beyond the left nipple line. Triple rhythm was present on auscultation. The liver extended 2 inches below the costal margin. The arrhythmia and other abnormal physical signs persisted until the twenty-ninth day when

cardiac dullness was increased slightly to the left only, the pulse was regular, except for a very occasional premature contraction, and was of moderate strength. On the thirty-second day, at 8 A.M., the pulse was regular with a rate of 118 per minute; at 11.45 A.M. the patient was of a good colour but unusually excited and talkative. The pulse was of moderate strength but markedly irregular with a rate of 140 per minute. Cardiac dullness extended 1 inch to the right of the mid-line and 1½ inches outside the left nipple line; first and second sounds were present on auscultation. The liver was tender and extended 1½ inches below the costal margin. The lungs were clear. During the succeeding 12 hours a great variety of rhythms were present. Periods of regularity, with a pulse-rate of 120–135, were interrupted by occasional premature contractions, occurring singly and in pairs. At times the premature contractions became so frequent and the pulse so irregular as to simulate auricular fibrillation. Two short regular paroxysms, at rates of 200 and 240 per minute, were followed by an extreme arrhythmia at a rate of 130 per minute. When the arrhythmia had persisted for several hours the extremities became cold, slight cyanosis developed, and the patient was collapsed. The pulse was feeble, but easily palpable. The lungs were clear. On the following day the patient was better. The pulse was stronger, with a rate of 118 per minute, an occasional premature contraction occurring. The cardiac dullness extended 1½ inches beyond the left nipple line, the increase to the right had disappeared. Clear first and second sounds were present. On the forty-sixth day the patient again had several paroxysms of cardiac arrhythmia, accompanied by symptoms of mental excitement and followed by collapse. Diaphragmatic paralysis, with bronchitis and pyrexia, had developed in the interval. Death occurred on the forty-ninth day. Up till the time of death the pulse remained of moderate strength, with a rate of 120 per minute, and was regular except for an occasional premature contraction. Cardiac dullness extended 1 inch to the right of the mid-line and 1½ inches outside the left nipple line. The apex beat was forcible, being in the fourth space 1 inch outside the left nipple line. Loud and clear first and second sounds were present. Liver dullness extended 2 inches below the costal margin. The patient gradually became unconscious, breathing became laboured, and death was apparently due to respiratory failure.

SUMMARY.

Two types of circulatory inefficiency are described, observed in the course of diphtheria and other acute infections: a vascular type and a cardiac type. In both disturbed nervous control is held to be the essential factor.

Vascular type.—The cardiac rhythm remains normal, and there occurs a primary failure of the *peripheral* circulation with subsequent embarrassment of cardiac action. The outstanding symptoms are vaso-motor and depend upon the disturbed function of the nervous control of the *peripheral* circulation. The intrinsic nerve elements of the blood-vessels, the extrinsic nerves and their connexions may all be involved; disturbance of suprarenal gland activity probably plays an important part.

This condition is described in the acute stages of diphtheria and dysentery; it has been noted also in severe cases of scarlet fever, pneumonia, and enteric fever. When it persists a group of symptoms—exhaustion on slight exertion, dyspnœa, pain, giddiness, and palpitation—is established which may become permanent; to obviate this, early treatment, complete removal of the infective focus, and adequate rest are essential in all patients suffering from acute infections.

Cardiac type.—This type, observed in diphtheria, is always preceded by the onset of a severe arrhythmia, due, as a rule, to frequent premature contractions with occasional paroxysms of regular tachycardia. A comparison is made between the state of the circulation in this condition and that which results from the onset of auricular fibrillation, the common cause of cardiac failure in patients not suffering from acute illness. It is suggested that any consideration of the factors controlling arrhythmia should embrace, in addition to the intrinsic nerve elements of the heart, its extrinsic nervous connexions, including the central nervous system, the sympathetic system, and the pathological processes which specially influence these structures.

References.—1. Bolton: Archives of Neurol., 1903, ii., 806. 2. Gunson: Brit. Jl. Childr. Dis., 1914, xi., 385. 3. Id.: THE LANCET, 1916, ii., 146. 4. Id.: Rev. of Neurol. and Psych., 1915, xiii., 317. 5. Id.: Brit. Jl. Childr. Dis., 1915, xii., 97. 6. Hubbard: Med. and Surg. Rep., Boston City Hosp., 1893, ix., 33. 7. Mackenzie: Dis. of the Heart. London, third ed., 1913. 8. Mallory: Bacteriol. of Diph., edited by Nuttall and Graham Smith, second ed., 1913, 99. 9. Moltschanoff: Jahrbuch f. Kinderheilk., Erganzungsheft, 1912, lxxvi., 200. 10. Sergent: Presse Méd., 1902, x., 939.

ON THE PRESENCE OF A SPIROCHÆTE IN THE URINE IN CASES OF TRENCH FEVER.

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AND
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TEMPORARY CAPTAINS, R.A.M.C.
With an Introductory Note by Colonel Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., A.M.S.

Introductory Note.

UNDER the term "trench fever" a large number of cases of fever have been observed that have certain features in common, more especially a peculiar temperature chart and slow pulse, together with severe and persistent pains in the bones of the legs. Although, with increasing experience gathered from the study of a large number of cases, several types of trench fever have been recognised, one outstanding feature common to many cases is the frequency with which the fever and the symptoms relapse. After an initial fever of short duration, lasting two to four days, defervescence takes place, and after an interval of varying length in different patients a further rise of temperature, with a return of the bone-pains, occurs. In some cases but one relapse takes place, in others more than one, and occasionally the illness may in this way be prolonged for several weeks. The patient may be free from discomfort in the apyrexial periods, but the severe bone-pains return with the febrile periods. In one type of case the pyrexia during the relapse is of quite short duration, the temperature returning to the normal within 24 hours of the rise. In these cases a very characteristic chart is obtained, as a single "spike" is seen at strikingly regular intervals, if the relapse occurs more than once. Such charts present a certain resemblance to the well-known charts of malaria, especially as cases may be seen where the relapse occurs with great regularity after a given number of days, varying, however, in different patients.

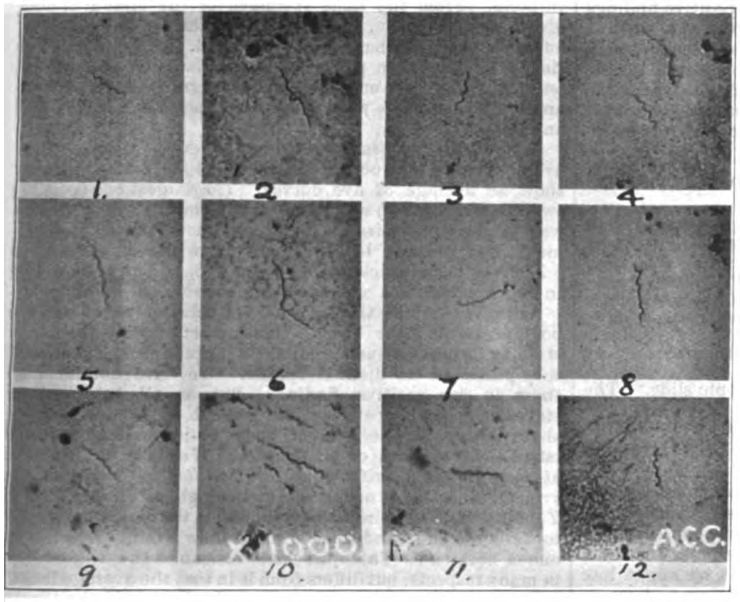
Prolonged observations have as yet failed to demonstrate any specific virus in the blood of these patients, although the work of McNee and his colleagues has shown that the infection is present in the blood and can be transmitted by inoculation of the blood. The fact that relapse is such a prominent clinical feature of the disease, and also the peculiar course of the fever, have suggested to many that the infective agents may possibly be of protozoal rather than of bacterial origin. Further, the tendency of trench fever to relapse presents analogies with certain spirochætal diseases, such as relapsing fever and Weil's disease; and in the latter malady spirochætes can be detected in the urine at a certain period of the disease. Several observers have succeeded in obtaining evidence of the presence of spirochætes in the urine of cases of trench fever, and Captain Nankivell and Captain Sundell in their present communication deal with this side of the problem. In Weil's disease the microscopic evidence of the presence of pathogenic spirochætes can be controlled by experimental inoculation into animals. In the case of trench fever this method of control has so far not been possible, as the disease has not yet been successfully transmitted to animals by any inoculation of blood, urine, &c.

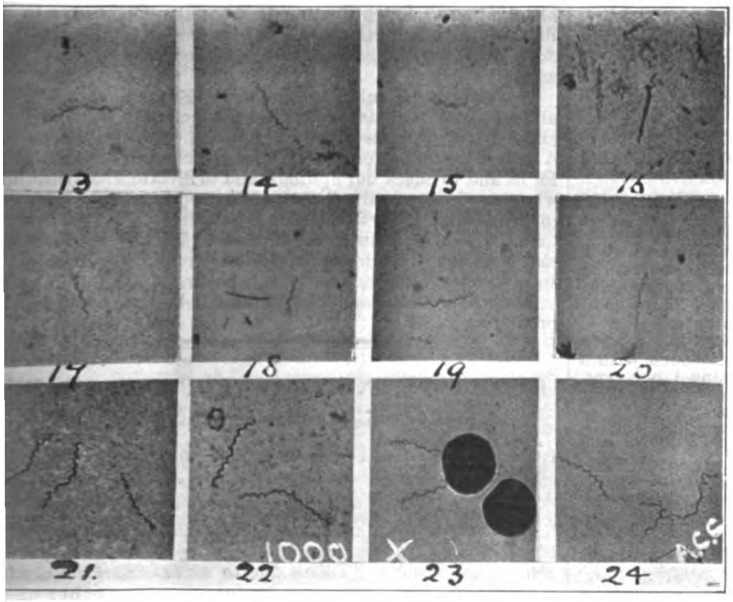
The demonstration of spirochætes in the urine of cases of trench fever cannot, therefore, be regarded as proving that trench fever is of spirochætal origin; but evidence of value in this direction would be obtained by proof that these spirochætes are only found in cases of trench fever, and more especially at a certain stage of the fever. Both these matters are dealt with in the paper by the authors.

Sept. 1st, 1917.

In the early part of June this year Lieutenant-Colonel C. J. Martin, F.R.S., A.A.M.C., showed us a specimen of spirochætes stained by carbol-fuchsin in a urine deposit from a case of trench fever. Since that time we have examined 99 specimens of the urine taken from 26 persons, and have found spirochætes on 29 occasions. Over 300 films have been made and examined.

Type of case.—Our investigations have, with three exceptions, been confined to that type of trench fever which has been called "five-day fever." Fifteen typical





Description of Photo-micrographs.

Stained with Giemsa's stain. Magnification precisely 1000. All taken under exactly the same conditions on two quarter plates.

FIGS. 1, 3, 4, and 15. Short spirochætes. Compare with size of red blood corpuscles in Fig. 23.

FIGS. 2, 5, and 17. Long spirochætes.

FIG. 7. Very shallow spirals. FIG. 20. Shallow spirals.

FIG. 13. ? Flagellum at left end.

FIG. 16, and horizontal one in 18, show straight bodies.

FIGS. 17 and 18 show a loop or thickening at the end of the spirochæte. A similar appearance has been noted by Reimer in his paper on spirochætes in the blood of trench fever patients.

FIGS. 21 to 24. *T. pallidum* from a primary sore, reproduced for purpose of comparison, and photographed under exactly the same conditions on the same plate. Figs. 21 and 22 deeply stained; Figs. 23 and 24 less deeply stained. Note difference in apparent thickness as an effect of the stain.

cases have been examined. The spirochætes have been found in 12. Each of the three negative cases was examined once only, and in one instance not till the twenty-third day. In three other cases of continued pyrexia with severe shin pains spirochætes were not found.

Controls.—We have examined the urine of eight "controls," including two healthy men, two cases of empyema, one of bronchitis, one paratyphoid, one malaria, and one early Weil's disease. In none of these cases were we able to find spirochætes.

Collection of samples.—In all our cases we took special care to exclude the possibility of primary or secondary syphilis and local diseases of the urogenital tract. Precautions were taken against contamination of the urine by saliva, and the urine containers were scrupulously cleansed before use. In two of our positive cases the first samples of urine were discarded and the penis cleansed with 1–80 carbolic before a second sample of urine was passed. This was collected in sterilised flasks and did not grow any organisms on culture. We do not think that catheterisation is justifiable. Clean and even sterile samples of urine can be obtained without this, and a prolonged course of catheterisation is not fair to a convalescent patient. The small number of spirochætes in our positive cases and the inconstancy of their presence (e.g., on 5 days only out of 21) are not in keeping with the hypothesis that the organisms we have found originated from a chronic preputial spirochætosis; had they been derived from that source they would have been present every day and in larger numbers. The smegma of one of our positive cases was examined for spirochætes, and none were present. In cases of balanitis spirochætes, indistinguishable from the spirochætes we are describing, are found under the prepuce; but they are invariably accompanied by large numbers of *S. refringens* and other micro-organisms. We have never yet found *S. refringens* in any of our films. These considerations, taken in conjunction with the fact that all our control cases were negative, seem to us sufficient evidence that the spirochæte found in cases of trench fever is not due to an accidental contamination.

Stage of illness investigated.—Four of our cases have been under observation from the first day of illness. In one, spirochætes were present in urine passed within 24 hours of the onset. The other cases were not examined before their first relapse. In several cases daily examinations were made over a period of 10 days, and in one over a period of 20 days. In this case spirochætes were found on five occasions only—the first, third, thirteenth, fourteenth, and seventeenth days.

Prevalence of spirochætes.—In our experience the presence of spirochætes is very variable. In a given case a succession of failures lasting several days may be followed by the finding

of a large number in a single film. We incline to the view that there is a distinct tendency for positive findings to occur in the urine passed 24 hours after the summit of the pyrexial "spike." We also found that spirochætes may be present in striking abundance on the fourteenth to sixteenth day. Four of our cases which had been negative for several preceding days showed this. In this connexion it is interesting to recall the similar behaviour of the spirochæte of hæmorrhagic jaundice.

Preparation of films.—The method we have adopted in preparing the films is as follows:—

Ten cubic centimetres of the urine are centrifuged at high speed for 15 minutes. The supernatant fluid is then pipetted off very gently, leaving the deposit and a layer of urine about 3 mm. in depth over this. Five cubic centimetres of distilled water are then added, and the precipitate thoroughly washed. The fluid is again centrifuged for a quarter of an hour, and the supernatant fluid is again pipetted off very carefully. The deposit is then thoroughly stirred with a platinum loop, and a film is made by superimposing three loopfuls on a clean microscopic slide. The piled-up drop thus obtained is dried in the incubator. The resulting film is circular, with a diameter of about 4 mm., and represents the sediment of about 1 c.c. of the original urine.

In the earlier stages of our work we used thicker films, made by adding further loopfuls of urine sediment to the dried film and again evaporating, but we now consider that single-layer films give the better results. Fearing at one time, after several consecutive negative films, that we might lose some spirochætes during the process of staining and washing through lack of fixative, we added a trace of egg-albumen, but the results obtained were no better than by the ordinary method.

It is our custom to make four films, each from a different urine sediment, on one slide. This ensures equality of staining, and each film acts as a control to the others, which is important in view of the erratic staining properties of spirochætes by the silver method. We have never yet found all these four films on one slide to be positive at the same time—a sufficient guarantee that the spirochæte did not originate in any of our reagents.

Staining methods.—We have stained the majority of our specimens by a modified Fontana silver method as follows:—

The film is washed gently for two minutes with a solution of 8 per cent. formalin and 1 per cent. glacial acetic acid in distilled water. This fixes the film to some extent and dissolves out some of the remaining urine salts. The film is then washed in absolute alcohol for one minute and allowed almost to dry. When nearly dry it is washed again for a few seconds with distilled water and then flooded with a hot 5 per cent. tannic acid solution containing 1 per cent. of carbolic acid. This mordant is poured on steaming from a test-tube, and is allowed to act for two minutes. The film is then thoroughly washed in distilled water. The silver solution used is 2 per cent. silver nitrate in distilled water, to which the faintest trace of ammonium hydrate—just enough to give a slight opalescence—is added immediately before use. This is used cold, and is pipetted over the film in a slow and continuous stream until the necessary depth of staining—a dark-brown colour—is obtained. The slide is then washed well in distilled water, and dried with a current of cold air by means of a "puffer" or a Politzer bag. In our opinion the use of blotting-paper in drying any delicate film is unjustifiable. The film should be mounted in Canada balsam; for if cedar-wood oil is placed directly upon the film the spirochætes are decolourised in a day or two. Spirochætes stained by this method and examined with a 1/12 objective and 6 ocular appear jet-black against a faint grey or brown background. When examined by dark-ground illumination they are brilliantly white and clear against the surrounding black. With Giemsa's stain the spirochætes stain pale red with a tinge of blue as seen with ordinary illumination, and are of a golden colour when viewed with a dark-ground illumination.

An alternative staining method to the Giemsa or the modified Fontana is with carbol-fuchsin. The film is mordanted as above, and is then stained for an hour in the incubator in strong carbol-fuchsin (Ziehl-Neelsen). It is then washed in distilled water. The spirochætes stain pink by this method. We have employed it only occasionally on account of the considerable ocular strain caused by prolonged searching. A spirochæte stained black, or appearing golden against a dark background, is more easy to see than one stained faintly red.

Presence in the urine.—Their number in the urine is variable. From the same specimen of the urine four films of the size of 5 mm. were searched, each for half an hour, and only one spirochæte was discovered. On another occasion, from the same patient, 22 spirochætes were found in one film. Before a urine was called negative at least three, and often four, films were made and searched, each for half an hour.

Morphology.—These spirochætes are actively motile. Their average length by ocular measurement is 8·15μ and they show an average of five curves. The largest one (possibly two joined together) was 12·5μ with 10 curves. The shortest was 5μ with 2½ spirals. By micro-photographic measurement the average length was 7·8μ with an average of 5·2 curves. The thickness is about 0·3μ. The spirals vary in depth, which is a common feature also in *T. pallidum*.

Associated with the typical spirochæte were straight bodies, having the same measurement and the same staining properties and similar in appearance except that they possessed no distinct spirals. We have not included these in our positive findings, but as all intermediate stages were found between the typical treponema with its sharp spirals to the straight body, it is possible that the latter is a variation of the former. We have seen similar atypical forms in dried films of *T. pallidum*. Some of the typical forms show nodes or thickenings, as is also seen in *T. pallidum*. The spirochæte is thicker in the centre and tapers towards the ends, and some seem to show a faint flagellum at one or both ends. This spirochæte resembles the *T. pallidum* in many respects, but differs from it in that the average length is less and the spirals are fewer. It is about half the length of the *Spirochæta recurrenti* (Obermeieri).

We have not yet succeeded in finding this spirochæte in blood films or in cultivating it from the blood stream as Reimer claims to have done, nor have we, up to the present, done any work regarding its pathogenicity to man and animals.

We have to thank Captain A. R. Friel, S.A.M.C., for allowing us to use his electric centrifuge. We wish also to express our indebtedness to Captain E. W. Ferguson, A.A.M.C., who has been good enough to search some films for us and to check our findings, and to Private J. M. Stanley, who has done much of the routine work entailed by our investigations. Our thanks are especially due to Dr. A. C. Coles, who has measured 80 of these spirochætes for us and has prepared the admirable photo-micrographs which illustrate so clearly the subject of this paper.

The whole communication is clearly in the nature of a preliminary note.

OPERATION FOR THE REPAIR OF THE CRUCIAL LIGAMENTS.

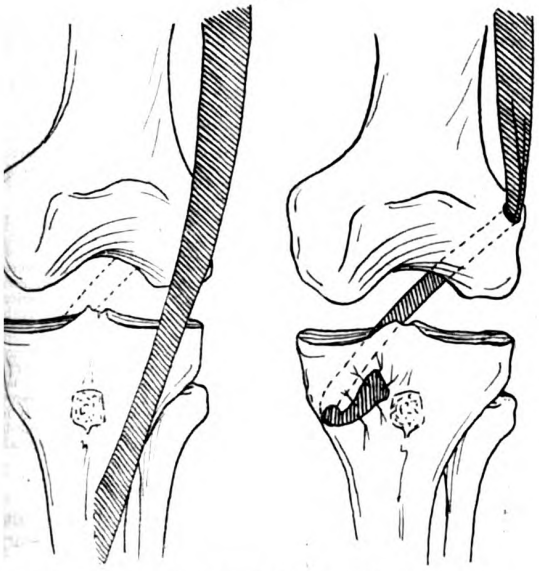
BY ERNEST W. HEY GROVES, M.S. LOND., F.R.C.S. ENG.
MAJOR, R.A.M.C. (T.F.)

IT is a matter of common knowledge that cases of rupture of the crucial ligaments are now much more frequently recognised than formerly. This is due to routine X ray examination, which often reveals the fracture of one or other of the tubercles of the tibial spine, and also to the greater frequency of "exploratory" operations upon disabled knee-joints. It is also a general experience that this injury is an extremely serious one, which produces permanent total disablement from active pursuits and which necessitates a very prolonged treatment by immobilising apparatus.

But whilst the frequency and importance of this injury are becoming more widely known there has not been any corresponding advance in methods of treatment. A rigid plaster or leather case to be worn for a year, followed by a hinged apparatus, represents the generally accepted method. It is impossible to regard intra-articular suture of the ligaments either by soft sutures or by wire, as an efficient procedure or as one free from the risk of leaving loose bodies in the joint.

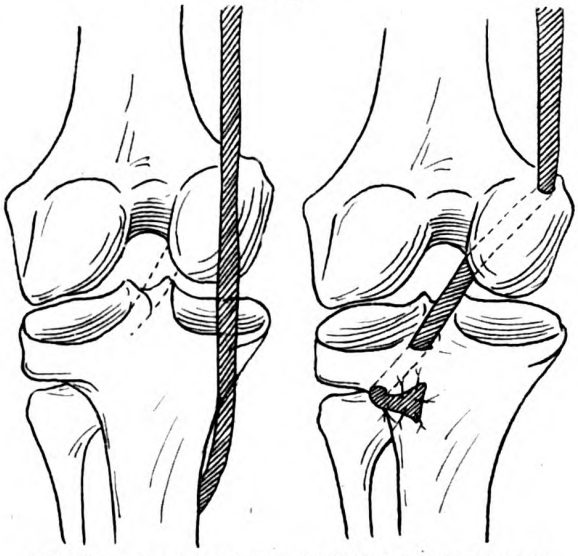
Some years ago I worked out a method of replacing the crucial ligaments by tendons or fascial bands, in the dissecting room, but it has only been recently that an opportunity has arisen for putting it to a practical test. It has, however, been so easy of performance and

FIG. 1.



Formation of a new anterior crucial ligament from the ilio-tibial band of fascia.

FIG. 2.



Formation of a new posterior crucial ligament from the tendon of the semi-tendinosus.

atisfactory in results that I think it worth while to publish his preliminary note, in the hope that the new suggestion nay prove of value to others.

Principle of the Operation.

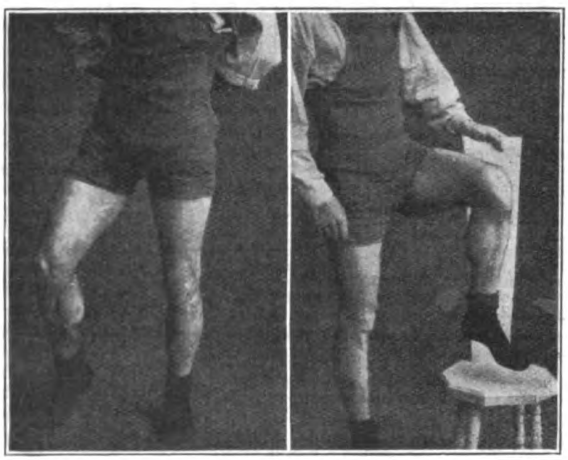
The principle of the operation consists in forming a new nterior crucial ligament from the ilio-tibial band and a ew posterior ligament from the tendon of the semi-tendinosus. In each case the new ligament retains its upper ttachment in the thigh and is threaded through new canals ored in the femur and tibia, and is sewn to the outer surface f the latter bone.

Exposure of the joint.—A wide horseshoe incision is made cross the joint, the lowest point being below the tibial ubercle and the lateral ends unning up to the lines of he hamstrings on each ide. The tubercle of the ibia is freed by two saw uts, one behind and parallel o the ligamentum patellæ nd the other at right ngles to the tibia below the ubercle. The patella is urned upwards sufficiently o expose the interior of the oint. In this act it is important to avoid cutting the io-tibial band. The joint now fully flexed and the ondition of the crucial gaments and of the pine of the tibia is ascertained.

Formation of a new anterior rucial ligament.—The lower nd of the fascia lata is xposed and defined upwards bove the level of the xternal condyle of the mur and downwards for bout an inch below the ubercle of the tibia. At he latter point it is cut cross and dissected upwards free from the underying structures. With the knee fully flexed, the two oints of attachment of the torn ligament are clearly efined and cleared of soft tissue. With a ¼-inch twist rill a canal is bored from within the joint upwards nd outwards through the external condyle of the femur nd another downwards and inwards through the internal berosity of the tibia, beginning in each case with the point of attachment of the original ligament. A probe is tied to the free end of the ilio-tibial band and by its means this piece of fascia rolled up as a cord is threaded through the femur and the tibia and drawn tight. When it emerges below the knee the fascial ligament is turned upwards and sewn to the deep fascia and periosteum of the tibia. (Fig. 1.)

Formation of a new posterior crucial ligament.—If both ligaments have to be re-formed the posterior will naturally be repaired first. The inner limb of the horseshoe incision is prolonged backwards and upwards until the inner hamstring is exposed and the tendon of the semi-tendinosus is defined. This is cut from its lower attachment 1½ inches below the joint. New canals are then formed by drilling from within the joint upwards, inwards, and backwards through the internal condyle of the femur, and then downwards and outwards through the external tuberosity of the tibia. Through these canals the semi-tendinosus tendon is threaded and fixed to the periosteum of the tibia. (Fig. 2.)

FIG. 3.



Closure of the joint.—The tubercle of the tibia is refixed in its original position by an ivory or metal nail and the joint capsule carefully closed by catgut sutures.

After-treatment.—The knee is kept on a back splint for about a fortnight, and then when the skin incision is soundly healed it is removed daily from the splint for gentle massage and passive movements.

After one month the splint is discarded and the patient is allowed up on crutches, and then full use of the limb is gradually restored, as this can be done naturally without pain or force.

The above operation was performed on April 25th, 1917, for A. D., whose knee had been injured by a kick from a horse. His knee was unstable and weak, so that he could neither stand nor walk without the support of a knee-splint.

The recent photographs (Fig. 3) show the patient standing upon the injured left leg and also bending the same. He can walk freely without a limp and has now returned to work.

A REPORT ON

THE TREATMENT OF A SERIES OF RECENTLY INFLICTED WAR WOUNDS WITH "PROFLAVINE."

BY

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THIS report on the action of proflavine in the treatment of recently inflicted wounds is to be read in connexion with a communication by Captain Hamilton Drummond and Captain J. W. McNee in THE LANCET of Oct. 27th, on the results obtained with acriflavine (flavine).

The sample of proflavine used in the present instance was put at our disposal by Surgeon-General Sir Anthony Bowlby early in August, and the tests have been made so that ready comparison of the effects of the two salts has been possible.

Proflavine (diamino-acridine-sulphate) is, as Browning and his colleagues have explained, a preliminary product in the manufacture of acriflavine or flavine (diamino-methyl-acridinium-chloride), and is therefore both easier and cheaper to make.

The cases described in this report have been under the care of the surgical officers of a Casualty Clearing Station (Captain Colledge, Captain Drummond, and Lieutenant Worthington), and the bacteriological work has been carried out in a mobile laboratory.

Scope of the tests.—The tests, for purposes of comparison, have followed the same lines as those detailed for acriflavine. A solution of 1 in 1000 in normal saline has generally been employed as a primary application, followed later by the use of a more dilute solution of 1 in 5000.

Number of cases, &c.—In all 43 cases have been treated with proflavine: in a number of instances, however, multiple injuries were present, so that nearly 60 wounds are included in the series. It has happened that the series of cases has included a large percentage of very serious injuries, so that the test of the antiseptic has been a severe one.

Classification of cases.—It seems unnecessary to classify the wounds in detail, but it may be stated that the cases include 7 in which large joints were involved (knee 3 times, shoulder twice, and elbow twice), 10 severe compound fractures of limbs, and 4 where large blood-vessels were injured.

A few illustrative cases may be given in detail.

A. *Wounds of joints.*—CASE 1.—Wound of the shoulder-joint with fracture of the great tuberosity of the humerus and very extensive muscle damage, necessitating removal of most of the deltoid muscle. The wound, after treatment with proflavine, was closed except for two small drainage-tubes. These were soon removed, and passive movements of the joint were begun on the twelfth day.

CASE 2.—Wound of the knee-joint. The foreign body was impacted in the spine of the tibia, and lying so far back between the condyles of the femur that complete exposure of the joint cavity by cutting through the ligamentum patellæ was necessary. The joint was sewn up completely after washing out with 1 in 1000 proflavine. On the second day about 10 c.c. of sterile blood-stained fluid was aspirated from the joint. The wound healed perfectly and passive movements were begun on the thirteenth day after the injury.

CASE 3.—A shell wound causing a compound fracture of the humerus, and opening up the shoulder-joint. The joint was extensively damaged, and the surrounding muscles were much lacerated. The wound was cleaned up as far as possible, but this proved very difficult. Large fragments of the upper third of the humerus were perforce removed, leaving a complete gap. The wound, which could not be closed, was treated with 1 in 1000 proflavine for the first four days, after which eusol was substituted. The wound is now healing quickly, and has never suppurated.

CASE 4.—A wound over the right patella, comminuting the bone and opening the knee-joint. A flap was turned up so as to expose the whole joint in front, and the foreign body and the shattered patella were both removed. The joint was irrigated with 1 in 5000 proflavine, after which both the wound of entry and the flap wound were completely closed. Healing by first intention occurred.

B. *Compound fractures.*—CASE 1.—An aviator, shot while flying. A machine gun bullet fractured the left tibia and fibula, causing also great destruction of the muscles of the calf. The posterior tibial artery was torn across, and ligatures were put round both artery and vein. The wounds were packed with gauze soaked in 1 in 1000 proflavine, and left untouched for 36 hours. No inflammation occurred, and the patient was able to be evacuated to the base on the tenth day.

This case is noteworthy as being the most serious compound fracture of a leg which one of us (H. D.) has seen recover without amputation. The notorious frequency of gas gangrene in cases of this kind, where the posterior tibial vessel has been destroyed, must also be remarked upon.

CASE 2.—A severe compound fracture of the femur. The site of fracture was exposed by joining the entrance and exit wounds, cutting through the vastus externus completely in the middle third of the thigh. Several large detached fragments of bone were removed. The cavity was washed out with 1 in 1000 proflavine, the muscle sutured with catgut, and the wound was then closed except for one Carrel tube inserted from the site of the entry wound. The Carrel tube was removed on the fourth day, no suppuration whatever having occurred. This patient was evacuated to the base on the sixth day after injury.

CASE 3.—A gunshot wound of the forearm, causing compound fracture of the ulna and very considerable laceration of the surrounding muscles. The entrance and exit wounds were opened up and damaged muscle and fragments of bone removed. The wounds were irrigated with 1 in 1000 proflavine and thereafter completely stitched up except for a drainage-tube, down to the bone, left in the anterior wound. The drain was removed on the following day, and both wounds healed by first intention.

C. *Wounds involving blood-vessels.*—Four cases occurred where large blood-vessels were injured. The injuries involved the axillary, brachial, and radial arteries on the same arm, and the superficial femoral vein and a large branch of the femoral artery on the same leg. In all cases the surrounding muscles were much damaged. It is sufficient to record that, after dealing with the vessels, all the wounds were completely sewn up after treatment with proflavine, and all healed without the least trouble.

Results of Treatment with Proflavine.

In the wounds treated by primary suture excellent results were obtained; in only one case out of 20 was it necessary to remove some of the stitches for drainage.

In some cases stitches were placed *in situ* at the time of operation and the wound left open with gauze packing for a day before the stitches were drawn tight. In all of these healing occurred as by first intention.

In wounds where primary closure was impossible owing to the amount of tissue removed the same set of changes occurred as were described for acriflavine. These changes were well seen in a case of amputation through the thigh and in some large wounds of soft parts. The surface of the wound became covered after a few days with a firm yellow pellicle and granulation tissue production was very slow. These wounds were then changed to other antiseptics, such as eusol. One case of gas gangrene occurred in the series and a full account of this patient will be given.

An officer was admitted with a severe penetrating wound of the chest and severe shell wounds of the buttock. He was so much shocked on admission that nothing could be done for 12 hours. The buttock wounds were then drained and packed with gauze soaked in 1 in 1000 proflavine. The missile could not be found in any of the three buttock wounds. The patient remained in very poor condition, chiefly owing to the severity of the chest wound, and after 24 hours an acute gas gangrene developed in the buttock. A fatal issue rapidly ensued.

Apart from this case no example of spreading sepsis was met with in the whole series of cases.

Bacteriology of the Wounds.

This can be dismissed very briefly, as the results are identical with those described for acriflavine. The same persistence of infection with coliform bacilli in the later stages of the wounds was again very noteworthy, and pyocyaneus infections were also common.

"In Vitro" Experiments with Proflavine.

The same technique was adopted as that detailed in the report on acriflavine, and coliform bacilli isolated from wounds were used for the tests. In this instance parallel tests were set up with acriflavine and proflavine so as to compare the results.

In an experiment where the two salts were dissolved in normal saline growth of the coliform organisms used still occurred in a dilution of 1 in 50 of each substance. When dilutions were made in fresh human serum, the results of the test with the same organism were as follows:—

	Proflavine.	Acriflavine
1 in 500 ...	No growth.	No growth
1 in 1500 ...	,, ...	,,
1 in 3000 ...	,, ...	,,
1 in 5000 ...	,, ...	Slight growth.
1 in 10,000 ...	Growth.	Growth.
1 in 20,000 ...	,, ...	,,

These results seem to show that there is virtually no difference in the action of the two salts in test-tube experiments on the same test organism.

Conclusions.

As tested in the treatment of a series of recent wounds, there appears to be no differences in the properties of the two substances acriflavine and proflavine. All the conclusions drawn in the previous report on acriflavine therefore hold with regard to the more easily produced "proflavine."

Sept. 10th, 1917.

RATIONS IN RELATION TO DISEASE IN MESOPOTAMIA.[1]

BY W. H. WILLCOX, C.M.G., M.D.LOND., F.R.C.P.LOND.,
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THE importance of selecting a correct scale of rations for the soldier was very great. Many considerations had to be borne in mind, viz.: (1) The physiological value of the ration; (2) the total daily vitamine value of the ration; (3) ability to provide the various necessary items; (4) the possibility of transport of the components of the ration along a long line of communications in great heat; and (5) economical considerations.

[The Ration Scale of G.R.O., I.E.F. "D," July 4th, 1916, and the revised scale of G.R.O., I.E.F. "D," Oct. 31st, 1916, were carefully considered.]

British Ration.

In each ration scale there was a very good ration, provided that facilities as regards climate, transport, &c., permitted the full supply of the various items. The physiological value of each ration scale was good, there being an ample but not extravagant margin of protein, fat, and carbohydrate. The vitamine value of each scale was adequate. Trouble arose when, owing to difficulties of transport and intense heat, there was difficulty of supply of fresh meat and fresh vegetables, &c.

Indian Ration.

In the ration scale of July 4th, 1916, the Indian ration showed a deficiency of protein and fat, and a large excess (70 per cent.) of carbohydrate. The revised ration scale of Oct. 31st, 1916, showed, if "atta" (Indian flour) were supplied, an adequate amount of protein and fat, but the carbohydrate was in large excess (70 per cent.). If rice were substituted for atta then there was a deficiency of protein and of fat, while the carbohydrate excess reached 80 per cent.

It is interesting to compare the rice or atta issue to Indian troops in the revised ration scale, viz., 1½ lb. per day or 10½ lb. per week, with the flour or bread issue to the civil population in England in the voluntary ration system which has been introduced. The Indian allowance is more than double of the latter.

Diseases Due to Variations in the Ration Supply.

Anæmia and Debility.—These occurred in the summer in both British and Indian troops, when, owing to transport difficulties and the great heat, the supply of fresh food (meat, vegetables, and fruit) was short.

Vitamine Deficiency Diseases.

Scurvy.—This was limited to Indian troops, practically no cases occurred in British. The Indians have very little power against scurvy, and in their own country often are on the borderland of scurvy. If he is subjected to deprivation of antiscorbutic vitamines in his dietary the Indian readily becomes a victim to scurvy, while the British soldier remains immune. In the hot weather of Mesopotamia the supply of fresh vegetables of necessity was much reduced and it was due to this, and the action of the heat itself on the bodily functions, that in the months May to September scurvy was a frequent occurrence in Indian troops. Fresh meat unexpectedly has an antiscorbutic value, and the inherent value of this by some of the Indian troops is one of the reasons of the occurrence of scurvy amongst them.

The antiscorbutic value of various articles in the ration was considered—e.g., sour limes, potatoes, onions, spinach or fresh vegetables, fresh fruit (all have a high antiscorbutic value). Dates and raisins were no doubt antiscorbutic; tamarind eaten as a chutney, or as an acid drink after infusion and sweetening, was, no doubt, antiscorbutic. "Coccum" had a reputed antiscorbutic value, but as it was often wasted and in any case of little value it would be well for it to disappear from the ration scale for Indians. As already stated, fresh meat has undoubted antiscorbutic value. Tinned fruits and dried vegetables have probably little antiscorbutic properties, since the process of preparation has very likely destroyed their vitamines. Tinned milk has little, if any, antiscorbutic value owing to the destruction of the vitamines by sterilisation. For the same reason pickles probably have little antiscorbutic value. Fresh milk is well known to be antiscorbutic, but the dangers of supply of this to troops, owing to the risk of cholera or enteric group infection, entirely prevent its issue to troops in the field. Lime-juice has had a long reputation as an antiscorbutic. If made from fresh limes and not kept too long before its issue to troops it is undoubtedly a valuable preventive of scurvy. Measures have been taken to ensure a supply of efficient lime-juice of good antiscorbutic value to the troops in Mesopotamia. Probably the most valuable antiscorbutics are fresh sour limes and raw potato. Raw potato can be made into a palatable salad by being cut up into small slices and mixed with onion and a little vinegar. In this way it has been used with great success in the treatment of early scurvy.

Beri-beri.—This disease has occurred in British troops, but practically no cases occurred in Indians, if one excludes the Indian prisoners taken at Kut and afterwards exchanged by the Turks. The occurrence of beri-beri is in the winter months—e.g., December and January, unlike scurvy, which occurs in the hot months. In December, 1915, and January, 1916, a number of cases occurred in British troops. Beri-beri has been shown to be a vitamine deficiency disease. The anti-beri-beri vitamines occur in the aleurone layer of the grain beneath the husk and also in the germ of the grain. The British flour, owing to its excessive refinement, involving the almost complete removal of the aleurone layer with the husk, and also of the germ, is not protective against beri-beri. The Indian flour, "atta," contains the aleurone layer and the germ of the wheat grain, so that it is protective against beri-beri. Also the "dhall" in the Indian dietary is protective against beri-beri. It is for these reasons that the Indian does not run the risk of getting beri-beri.

On medical advice the British ration after July, 1916, was made to include oatmeal and at times "dhall"; also yeast has been well known to be rich in anti-beri-beri vitamines.

Researches were carried out by the War Office, and it was found that an extract of yeast made under special conditions was extremely rich in anti-beri-beri vitamines. This has been issued to the British troops in Mesopotamia since the autumn of 1916 as a ration under the name of "marmite." Marmite is in taste and appearance like extract of meat, and can be taken as it is or in stew or soup.

It has been interesting to note that very little beri-beri has occurred in the British troops in the winter of 1916, and not a single death has occurred from this disease. The cases that have occurred have been of a very mild character.

A very convenient method of providing the British soldier with anti-beri-beri vitamines is to make his bread of a mixture of British flour and "atta." This bread is very palatable, and has a high protective value against beri-beri. The trial has been made with success in the force in Mesopotamia.

As regards "economic considerations," a considerable saving without any lack of efficiency could be secured by reducing the excessive ration issue of "atta" and rice to Indian troops, provided that the small amounts of protein and fat in the withdrawn carbohydrate food were replaced in other ways.

[1] Abstract of a lecture delivered before the "Amara Clinical Society," Sept. 9th, 1916.

AT a meeting of the medical men practising in the Exeter division of the British Medical Association, held on Oct. 25th, a resolution was unanimously passed in favour of opposing Clause 18 of the Education Bill, 1917, whereby power is granted to all schools to procure treatment by whole-time men for the pupils. The opinion of the meeting was that it is not to the interest of the public that the treatment of young people should be taken out of the hands of the family doctor.

THE INFLUENCE OF HYPNOTIC SUGGESTION ON INFLAMMATORY CONDITIONS.

BY J. ARTHUR HADFIELD, M.A. OXON., M.B. EDIN.,
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THERE has from time to time been considerable controversy as to whether it is possible to produce blisters on the skin by hypnotic suggestion alone. Having been fortunate enough recently to have a very susceptible patient (Leading Seaman H.P.) in the Royal Naval Hospital, Chatham, I have succeeded in producing this phenomenon. The following series of experiments in my opinion, and in that of the surgeons who took part, leaves no doubt on the question as to its possibility.

Blisters on Skin caused by Hypnotic Suggestion.

1. In the first instance the blister was produced somewhat unexpectedly. I had hypnotised the patient, whom I was treating for "shell shock" symptoms, and was exhibiting to another surgeon one or two sensory phenomena produced under hypnosis, including the suggestion to the patient that I was touching him with a red-hot iron. When I touched him with my finger he withdrew his arm with such evident pain that I proceeded to suggest that a blister would form. I then wakened him, and thought little more about the matter. But half an hour later the patient returned and asked if I had done anything to his arm when he was hypnotised, as it was painful and burning, and he pointed to a blister which was indeed forming and ultimately became full of fluid and surrounded with hyperæmia. This experiment, however, I did not regard as conclusive, because the patient had scratched the part, and it might be argued that this alone had produced the blister. In any case, probably the scratching *accelerated* the formation of the blister. It is worth noting, however, that the patient knew nothing of my intention nor remembered anything of my suggestion during hypnosis. I therefore explained to him what I had done and asked his coöperation, inasmuch as it implied the suffering of pain; this he readily gave.

2. The next experiment was performed under strict conditions. The patient was hypnotised as before, and the suggestions made that his arm was being touched with a red-hot iron and that a blister would form. He was watched for about three hours, part of the time being spent under hypnosis and part in the waking state. The arm was then bandaged up with a large roller bandage, so that it would be impossible for him to interfere with the area touched; the bandage was pinned with a safety-pin, the pin sealed with sealing-wax, and the patient sent to the ward. I returned in six hours from the commencement of the experiment, and the patient told me that in spite of his desire to assist he had twice nearly sent across to the officers' mess to ask me to put him out of his pain, but he went on to say that after five and a half hours the pain had suddenly ceased. When I removed the bandage I found that *a blister had formed on the spot I had touched*. There was a white patch of dead skin in the centre, underneath which was a slight amount of fluid and hyperæmia around. The part was then left exposed. Meanwhile the blister increased in size, and by the next day there was a large quantity of fluid, giving the exact appearance of a blister produced by heat.

3. This experiment was repeated under still stricter conditions a few days after. This time the lateral aspect of the upper arm was chosen instead of the anterior aspect of the forearm. Suggestions were made in the same manner as before, but the following stricter precautions were taken. I was personally never left alone with the patient; the patient was never left alone; and I personally never touched the arm of the patient, this being done by another surgeon present, whilst I made the verbal suggestions. Throughout the day the patient was watched, and at night-time he was not only watched by the night nurse, next to whose table his bed was placed, but his arm was securely bound up and sealed as before. The next morning the bandage was removed in the presence of three surgeons (including the Deputy Surgeon-General). The seal and bandage were found to be intact, and beneath there was on the spot suggested the beginning of a blister as before, which gradually developed during the day to form a large bleb with an area of inflammation around. Photographs were taken of this blister. In this case the bandage was removed in 24 hours after the experiment was started as contrasted with 6 hours in the second experiment. The increase in time taken for the blister to form in this case was partly due to the fact that the arm was for some hours exposed to the cold air; and also probably to the extra thickness of skin in this part of the arm as compared with the anterior surface of the forearm used in the second experiment. I may add that the patient was kept "asleep" for about half the time and "awake" the other half, but for the whole time, except in the normal sleep at night (which was, however, induced by means of hypnotism), the patient showed signs of being in pain. The patient had his dinner while hypnotised, and also went to his ward, undressed, and got into bed in hypnotic trance.

4. When I touched one spot with the finger suggesting that I was touching the spot with a red-hot iron and causing pain, I also touched another spot suggesting the same thing, but adding that the patient would feel *no pain* in this one, but that a blister would form. In this case no blister formed. This seems to indicate that it was the suggestion of pain, and perhaps continuous pain, which produced the blister.

Effect of Suggestion of "No Pain" and "Pain."

5. In the fifth and sixth experiments I *actually burnt* the patient during hypnosis with a hot iron—the end of a steel pencil-case heated in a Bunsen flame. In the fifth experiment (carried on simultaneously with the second) I suggested there should be *no pain* as a result of these burns. There was no pain either when the skin was touched or afterwards. But the remarkable thing was that in these burns there was *no hyperæmia* around. Round each of the two spots, which themselves presented the ordinary appearance of blisters, there was a thin red line and nothing more. These blisters healed very rapidly and never gave any sign of inflammation or pain.

6. Further, simultaneously with Experiment 3 I made an *actual burn* and *suggested pain*—the condition, of course, which would occur in the normal waking state, except that in this case the patient, being hypnotised, forgot all about it when he was "wakened." This continued to pain afterwards, and in this case there was very considerable hyperæmia, and the burn took longer to heal.

The illustration from a photograph taken professionally a few hours after the blister formed in Experiment 3 shows



(*a*) Blister produced by suggestion (Exp. 3); (*b*) blister produced by hot iron—with pain (Exp. 6); (*c*) blister produced by hot iron—without pain (Exp. 5); (*d*) area which was touched as in (*a*), but with the suggestion "no pain"; no blister was formed. The safety-pin was introduced through the flesh to indicate the reality of the hypnosis and the analgesia produced by suggestion.

Conclusions.

These experiments, it will be noted, are all in the sphere of *non*-bacteriological inflammations. I had intended proceeding to experiment with bacteriological inflammations, but the demands of the Service compelled me to postpone it. The experiments, however, point to conclusions of some importance, namely:—

(*a*) The effect of pain in retarding healing processes. The heat blister produced in Exp. 5, where there was pain, reacted considerably and also took longer to heal than the blister with no pain produced in Exp. 5. This confirms, in experiment, the suggestions put forward by Hilton in "Rest and Pain" that pain may act as a deterrent to healing. He therefore advocated that the nerve-ending of an irritable pain-producing nerve in a wound should be clipped

off. These experiments under hypnosis suggest that if a patient can be hypnotised deeply enough and pain be abolished the healing process would be greatly facilitated. This might apply not only to surgical conditions, but also to medical conditions such as pleurisy. Pain is a very valuable indicator to point us to physical disorder or injury, but this seems to exhaust its function, and its abolition, either by the surgical means suggested by Hilton or, if possible, by hypnotic means, would conduce to greater rapidity in healing.

(*b*) The regulation of the blood-supply. It is a well-known fact that hyperæmia may be produced by suggestion. The experiments made in producing blisters show to what lengths this regulation of the blood-supply can go in a susceptible patient. This seems to indicate that when we know more about hypnotic suggestion, and have attained a greater skill in inducing it in a larger proportion of patients, we may be able to affect for good *any* organic inflammatory condition whether medical or surgical, both by regulating the blood-supply (imitating Bier's congestion method, for instance) and also by the abolition of pain.

I do not suppose for a moment that these experiments will convince those who are unacquainted with hypnotic work, and some of whom deny even the existence of hypnotism altogether. But they were conducted under the strictest scientific conditions, and were such as to satisfy the surgeons, of whom there were eight or nine, who had a share in them. Moreover, in order to show my good faith in the matter, I am quite prepared to repeat the experiments under any conditions that may be considered necessary, when the exigencies of war permit of my doing so, provided I can obtain the consent of the patient, to whose endurance during several hours of pain I am indebted for the opportunity of conducting the experiments, and by whose permission, as well as that of the Surgeon-General of the Royal Naval Hospital, Chatham, I am enabled to publish them.

A CASE OF

EPILEPSY CURED BY REMOVAL OF CALCAREOUS INTRACRANIAL TUMOURS.

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AND

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APART from Jacksonian epilepsy—that is, attacks which indicate a definite cerebral place of origin of the convulsion—there are a numerous group of diseases where attacks may occur which simulate the features of so-called idiopathic epilepsy. These may occur in conditions of general blood poisoning such as arise from intoxications by lead, arsenic, alcohol, morphine, or from uræmic states. They may also occur in diffuse diseases of the brain, such as dementia paralytica, multiple sclerosis, cerebral syphilis, or meningitis. A careful consideration of the history and general signs exhibited by the patient will, as a rule, exclude these cases of epileptiform attacks consequent on general blood poisoning or diffuse cerebral disease. There remains, however, a small group of cases where typical epileptiform attacks may be the result of a small local lesion of the brain. The lesion may be so situated that no indication is given of its situation by the nature of the convulsions, and the differentiation of these cases from true idiopathic epilepsy must depend on the mental state of the patient. In the latter condition there appears in the majority of cases a gradual transformation of the entire psychic being, affecting the intelligence of the patient (epileptic degeneration), and in the severe forms of the disease terminating in a condition of marked dementia. It follows that in any chronic case of epilepsy, in which the character and intelligence of the patient are maintained at their normal level, the most careful investigation should be made to endeavour to discover a local cerebral lesion which might be the cause of the epileptiform attacks. In the majority of cases no definite lesion is found and there are but few cases on record in which operative treatment aiming at the removal of a localised lesion has been followed by successful results. In this respect it is important to remember that any operation upon the head or even upon any other part of the body may be followed by complete relief of the epilepsy for several weeks with subsequent recurrence of the fits, and unless this fact be borne in mind one is prone to believe that such an operation has removed the causative factor of the fits.

In the following case of what was apparently a chronic condition of epilepsy dating from childhood, but in which there was only slight evidence of change in character or mental condition, an examination of the skull by the X rays revealed the presence of a calcareous mass in the temporo-sphenoidal lobe, the removal of which has caused a complete cessation of the epileptiform seizures for the past two and a half years. The details of the case are as follows:—

R. S., male, aged 23, was sent to the hospital with a note from the physician stating that he had had epilepsy for many years and asking whether a radiograph of the skull might throw any light on the condition present. The patient stated that ever since the age of 4 he had had fits. He had kept a careful account of these fits and stated that there had been six major ones and 193 minor ones. In the major fits there was a definite aura a few minutes before the attack. During the fit he would fall, be quite unconscious, and would bite his tongue. There was no incontinence. This was followed by a period of prolonged sleepiness, and after this by a severe headache. In the minor fits there would be a slight warning and a sensation of giddiness. He would not fall, but nearly always uttered an involuntary cry. The attack would pass off in a half to one minute, but would leave him a little drowsy. When a child he had a course of bromides with good effect, and lately this has been repeated, but the drug seems now to be of but little value in controlling the attacks.

No history could be obtained as to the condition of his health at the onset of the fits, and there was no evidence of any severe lesions such as meningitis. He has found lately that he has been unable to do mental work, especially mathematics, and for the last two years his memory has been poor. He now finds he is less able to do physical work. He tried a course of farming in Canada, but was unable to continue with it. There was no family history of epilepsy or other nervous disease, and he and his parents were total abstainers. On examination there was no evidence of mental deterioration, and, in fact, his intelligence was rather above the average. There were no physical signs in the motor or sensory systems, and his cranial nerves showed no change. There was some deafness on the right side, but this did not appear to be due to any change in the internal ear. The vascular and respiratory systems were normal.

Owing to the request of the physician a radiograph of the head was taken, and it was then seen that there were two large apparently cancellous bony masses attached to the upper and posterior aspects of the right petrous bone. (Fig. 1.) The more anterior of these was somewhat pedunculated and projected into the cavity of the skull for a distance of 1 to 1½ inches. The nature of these tumours was somewhat doubtful, for although they appeared to be formed of cancellous bone, it was realised that osteomata within the skull are nearly always dense and of the so-called ivory variety. In view of this appearance and the right-sided deafness a report on the condition of the ear was requested from Mr. Hunter Tod. He kindly examined the patient, and reported that there was slight middle-ear deafness on the right side. The seventh and eighth nerves were not affected, and he did not think that the deafness was due to the bony growth.

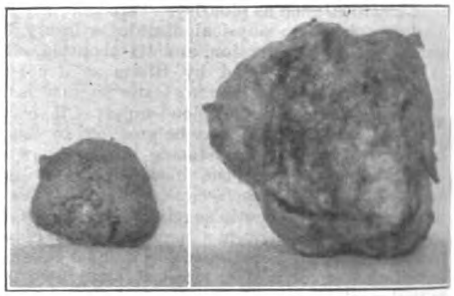
The patient was admitted to the medical service on May 31st, 1915, and was transferred to the surgical service on June 16th following. During this period he had five or six fits a day, nearly all, however, of the minor variety. On June 16th an operation was performed. After preliminary injection of morphia and atropine and under ether anæsthesia a large osteoplastic flap was made in the right temporal region. The bone flap was square in outline, the size of the square measuring 3½ inches. The flap was made by cutting four holes through the skull with a trephine and uniting these trephine openings by means of a Gigli's saw, the underlying dura being carefully protected. The dura at the base of the skull was carefully elevated from the middle fossa until the bony mass was reached. It was then seen that these projected into the dura, their irregular surfaces being very adherent to the thinned-out dura. An attempt to free the dura from them soon showed that this would not be possible, even although a certain amount of the temporal bone and greater wing of the sphenoid was removed below

FIG. 1.



Lateral view of skull showing bony tumours attached to petrous bone.

FIG. 2



Photograph of tumours after removal.

the level of the osteoplastic flap. The dura was therefore freely opened and the temporal lobe elevated by wide malleable copper retractors. By this means a very good view of the tumours was obtained, and it was seen that they projected into pits in the brain lined by pia arachnoid, having, in fact, much the same relationship to the brain as is found in cases of endotheliomata of the dura. With care it was possible to entirely free them from the brain, this latter structure being gradually elevated. The thinned-out overlying dura was then incised and the tumours gradually freed down to their point of attachment to the petrous bone. By pressure they were then easily broken off the petrous bone, the surface of which was smoothed with a chisel. The brain was then allowed to drop back into place, the dura was sutured, and the osteoplastic flap replaced in position. The portions of bone removed consisted of two separate tumours, the larger of which had been attached anteriorly. This was about 1½ inches in diameter, was roughly lobulated, and was covered with fragments of dura. (Fig. 2.) With a knife the outer surface was felt to be formed of bone. The smaller tumour, which had been attached slightly posteriorly, was about three quarters of an inch in its longest diameter and was rather smoother. (Fig. 2.) It also apparently consisted of hard bone. The tumours were sawn in half, and it was then seen there was only a thin outer casing of bone with a few septa, the centre portion consisting of a rather firm caseous-like material. Portions of the tumour were decalcified and cut, and Dr. H. M. Turnbull reported "calcareous impregnation of psammoma bodies and formation of lamellar bone in periphery of necrosed angiofibroma of dura of petrous bone." The stitches were removed on the tenth day, there being primary union of the wound. The bony flap was in good position, as there had been no increase of intracranial pressure. (Fig. 3.) He had had no fits since the operation.

On July 7th he was discharged from hospital to the convalescent home in good health, the wound being firmly healed.

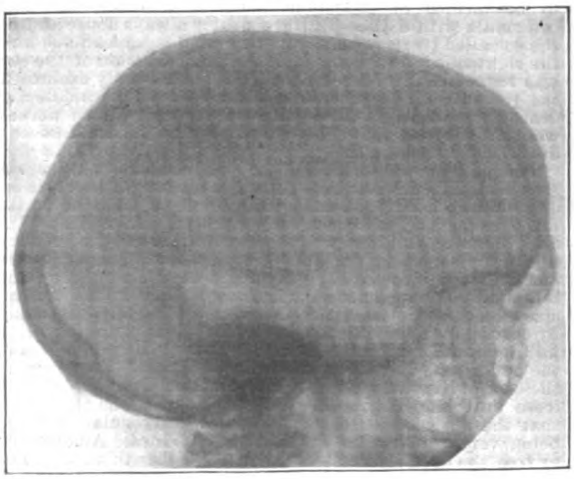
On Oct. 6th—that is, four months after the operation—he was seen again. There had been no return of the fits although in the interval he had been taking no bromides. There was no pain in the head and the flap fitted perfectly and firmly. The radiograph showed that union was taking place at the edges of the flap, and there was no evidence of any irregularity on the upper surface of the petrous bone.

Oct. 10th, 1916: Since the operation there have been no fits. He has been in perfect health and has been engaged in business for eight months. He is able to carry this out satisfactorily and is never troubled with loss of memory or inability to do mathematics. The long flap is in perfect position and the trephine openings feel much smaller. There is no tenderness at the site of the operation.

April 24th, 1917: He still feels perfectly well and is free from all symptoms. He is able to carry out his work perfectly and feels in every way a normal man. He has had no fits or minor attacks since the operation. The scar is invisible; the trephine openings can barely be felt, and the X ray photograph (Fig. 4) shows considerable new growth of bone at the site of the trephine openings and the edges of the flap, which is firmly united in position.

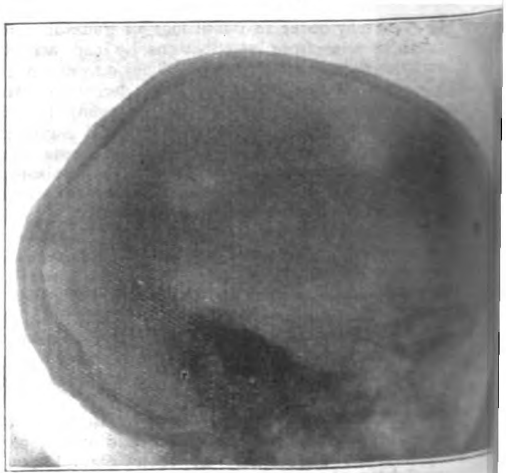
That the fits were due to the presence of the tumours is quite clear. At first it was feared that the improvement was temporary and was due to the shock of the operation, a condition often seen when operations are performed on any part of the body of an epileptic. He has now, however, been carefully watched for a period of over two years and during the whole of this period has not had a single attack either of the major or the minor variety. His mental condition and his memory are good, and his power of application has greatly increased, so that there is now every probability that he is permanently cured.

FIG. 3.



Lateral view of skull showing bony flap replaced in position.

FIG. 4.



Lateral view 24/4/17 showing bony plate uniting at edges. Trephine holes decreasing in size.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

The Use of Nitrous Oxide and Oxygen with Regulated Rebreathing in Military Surgery.

A MEETING of this society was held on Oct. 29th, Sir StCLAIR THOMSON, the President, being in the chair.

Captain H. EDMUND G. BOYLE, R.A.M.C. (T.), read a paper on Experiences in the Use of Nitrous Oxide and Oxygen with Regulated Rebreathing in Military Surgery at the 1st London General Hospital. His paper appears in full on p. 667 of our present issue.

Colonel D'ARCY POWER confirmed all Captain Boyle had said from the surgeon's point of view. He asked what amount of experience it was necessary for an anæsthetist to have before using the method on a large scale. Unless care were taken the patient was likely to come out from the anæsthetic, as it was on the light side.

Dr. DUDLEY BUXTON said that before using the method much care and experience were necessary, and he emphasised the importance of rebreathing. There were two schools: one held that there was always some cyanosis, the other that cyanosis was dangerous and should be avoided. He agreed with the latter and considered that cyanosis was not a necessary accompaniment of anæsthesia, and cyanosed cases were always worse afterwards. He thought it better to give the alkaloids an hour before the operation, and laid stress on the importance of silence during induction, for which there should be a separate room.

Mr. HERBERT PATERSON said that he was associated with Captain Boyle at Queen Alexandra's Hospital for Officers, Highgate. One drawback to the method was that when gas and oxygen were given for abdominal operations patients suffered severe pain for about 12 hours afterwards. He thought the reason was that the intestine was not paralysed, as is the case after ether and chloroform, so that peristalsis continues for longer; but morphia could be given. One great advantage was the absence of nausea, which might last three days after the administration of ether. He then alluded to the very slight post-operative rise of temperature. After clean operations, performed under aseptic conditions, some rise of temperature was regarded as usual, but he had come to the conclusion, after working at Highgate, that—speaking of clean operations only—the average post-operative rise of temperature with gas and oxygen was one degree lower than in similar operations in London performed under chloroform and ether. Mr. Paterson then showed temperature charts of patients operated on for appendix and hernia, illustrating the difference in temperature between those who had gas and oxygen and those who had chloroform and ether. In the former the highest temperature was 99° F., whereas in the latter it usually rose to about 100°. In one cases in which gas and oxygen had been given there was no rise of temperature at all. He thought there was no comparison between gas and oxygen in experienced hands and chloroform and ether. Gas and oxygen were first given for long operations in 1895, but since then the technique was much improved. The late Sir Frederic Hewitt and Mr. Bellamy Gardner used it in 1895, and it was re-discovered in America in 1897. He considered it most difficult to give. Six months' if not even a year's experience was needed before it could be given satisfactorily from the surgeon's point of view. It might make the operation more difficult to do, but the patient was safer and was more comfortable afterwards, and fatalities were less frequent.

Colonel H. J. WARING said that, owing to the very short time needed for induction, much of the surgeon's time was saved. The following classes of case were suitable for gas and oxygen: (1) Septic cases, and patients requiring severe operations; (2) operations on patients who were extremely ill, as there was very little shock; (3) operations on old people, as there was not the same danger of bronchitis. The method was not suitable for muscle-splitting operations, such as operations on the gall-bladder, but was good for operations for enlarged prostate and septic operations. He thought that the small amount of suffering by the patient was a very important point, and he gave instances illustrating the quick recovery from the anæsthetic.

Mr. J. H. CHALDECOTT said that his own experience of gas and oxygen dated from the publication of Crile's paper in this country. It was then used combined with local anæsthesia, and he had so used it at St. Mary's for abdominal operations. He considered it good combined with local anæsthesia; the gas and oxygen provided unconsciousness; the local anæsthetic provided anæsthesia. He never gave gas and oxygen alone for gall-bladder operations, but combined with novocaine it was excellent and gave no after-trouble. Referring to the management of cases, he said that (1) a good airway should be ensured before starting; (2) there should be silence during the induction and during anæsthesia; and (3) the anæsthetic should be continued until the patient was on the trolley and not stopped while he was still on the operating-table, or he would come round. He thought it was important that the patient should be placed in position for operation before induction.

Mr. MCADAM ECCLES objected to the tooth-prop, as patients complained of it. He wished to know something of the cost of the method as compared with ether and chloroform. He thought the weight of the apparatus would make it inconvenient for use in many instances, such as for operations performed in private houses. Owing to the quantity required, gas might run out in the middle of the operation. What could be done under such circumstances? He thought the after-pains were due to the intestine not being paralysed and peristalsis still going on. He found that hot water in rubber bottles placed on the abdomen relieved pain. He insisted on the need for quiet before induction and thought the alkaloids were important in this connexion. The patient should never be touched during induction by anyone but the anæsthetist, and should be placed for preference on the operating-table before induction. The rapidity of induction allowed this without loss of time to the surgeon.

Dr. F. E. SHIPWAY said that one point not touched upon was that rebreathing introduced a new element—namely CO_2, which acted as a stimulant to the respiratory centre, and therefore produced a different type of anæsthesia. He asked what was the percentage of CO_2 in the bag, and said that with an increase of CO_2 and diminution of oxygen a heart was being stimulated which was already starved of oxygen and would easily become dilated. In America a good many deaths were known to have occurred under gas and oxygen. He suggested that the percentage of CO_2 in the bag should be worked out. He thought the stimulation of medullary centres by CO_2 was the cause of vomiting during and after anæsthesia; the amount of CO_2 should be reduced as much as possible. There was urgent necessity for research in anæsthesia, both scientific and physiological, and money was needed to carry it out.

Mr. HUGH LETT thought that gases should be heated and that the administration of unheated gases might be the cause of the bronchitis which occurred.

Mr. BELLAMY GARDNER said there was great danger in trying to rely solely on gas and oxygen. When vomiting occurred during anæsthesia it was not possible to overcome the consequent closing of the air-passages by narcotising the vomiting centre further, as could be done by ether or chloroform. He thought the advantages of the method were not compensated for by the disadvantages of which the patient was ignorant.

Dr. HUGH R. PHILLIPS said the effect of gas and oxygen combined with local anæsthesia depended upon the method of local anæsthesia employed. If complete in all layers the result was very good. Silence was of more importance in this method than in any other; the patient should be placed on the table some time before induction was begun. The disadvantages of the method were the weight of the apparatus and the expense. The cost of gas and oxygen and sufficient ether was about 10*s.* to 12*s.* per hour.

The PRESIDENT noted the remarkable absence of shock in some of his operations—e.g., in resection of septum and laryngo-fissure, the latter requiring a good deal of manipulation. He accounted for it by the fact that a local anæsthetic was always used.

Captain BOYLE said that the amount of experience needed depended entirely upon the personality of the administrator. Some learned the method very quickly. He thought the cost was about 7*s.* 6*d.* per hour. The apparatus weighed about 65 lb. There was no need to heat the gas, as it was heated by patient's breathing. If the gas ran out it was easy to pass the oxygen through the ether and give that combination for the remainder of the operation.

THE ASIATIC SOCIETY OF BENGAL: MEDICAL SECTION.

Leprosy Cases Treated by Sodium Gynocardate and Chaulmoograte Intravenously.

A MEETING of this section was held on Sept. 12th, Lieutenant-Colonel Sir LEONARD ROGERS, I.M.S., Vice-President, being in the chair.

Sir LEONARD ROGERS showed 12 cases of Leprosy, together with coloured drawings, photos and lantern slides of cases taken before and after treatment with sodium gynocardate and chaulmoograte intravenously. In February, 1916, he had recorded in THE LANCET promising results in the disease by the use of gynocardates orally and subcutaneously, and in October of the same year he described in the *British Medical Journal* the intravenous use of the same drug. He had now had a further year's experience and had treated a number of advanced cases for sufficient time to eliminate temporary spontaneous improvement and to allow a fairly definite opinion to be formed regarding the value of the new treatment. He had also found that the soluble sodium salts of the higher melting point acids (49° to 62° C.) were more active in leprosy than the lower ones (37° to 40° C.), which he had at first mainly used, thus effecting a further concentration of the active portion of the oil. This had resulted in considerably more rapid improvement in cases during the last six months than he had formerly obtained. As, according to Hooper, the term gynocardic acid was first applied by Moss to a mixture of fatty acids with a melting-point of 29° C. obtained from true chaulmoogra oil of the seeds of *Taraktogenos kurzii* and the higher melting-point acids recently separated contained chaulmoogric acid (and probably also some hydnocarpic acid), the salts now being used for intravenous and subcutaneous injection in leprosy cases might be more correctly termed for the present sodium gynocardate and chaulmoograte with given melting-points until pure substances could be isolated and tested. Dr. Sudhamoy Ghosh, D.Sc., was continuing his chemical investigations of the oil from *Taraktogenos kurzii*, which alone had been used in the cases shown, the Indian Research Association having kindly continued their grant for this purpose through the late Sir Pardey Lukis. More favourable results were first obtained with preparations of fatty acids with a melting-point of from 49–51° C., which proved more active and reliable than those of from 37° to 40° C. melting-point, and at present one with a melting-point of 54° C. was being used with favourable effects. Messrs. Smith, Stanistreet and Co., of Calcutta, were now making the higher melting-point preparations in place of the less active lower melting-point ones they previously supplied at the speaker's suggestion. A 3 per cent. solution was made, with the addition of ½ per cent. sodium citrate (to prevent clotting in the vein after injection, which was more likely to occur with the higher than with the lower melting-point preparations), and after sterilising in an autoclave ½ per cent. carbolic acid was added, or the carbolic acid might first be added and the solution heated on a water-bath to 100° C. for 20 minutes. The doses were gradually increased by ½ to 1 c.c. at a time, beginning with 1 c.c. and pushing it up to 4 or 5 c.c., as long as severe giddiness was not produced, the injection being made slowly when given intravenously. In addition, 2-grain pills or tablets were given by the mouth after meals on the days the intravenous injections were not made, beginning with 3 pills a day and increasing by one daily until 10 or 12, or even as many as 20, pills were taken each day provided the digestion was not disturbed. Many of the cases had been successfully treated by intravenous injections once or twice a week without the pills, but progress was more rapid with the combined method, although it was more expensive. By the intravenous method alone cases could be treated for a year at a cost of only two to three shillings each for the drug. The treatment must be continued for long periods, usually a year or over, although one early tubercular case cleared up in five months and had remained free for six months after cessation of treatment, while in another the tubercles and the bacilli disappeared in six months, but the patient had been lost sight of It was probable that progress would be more rapid with the new higher melting-point preparations, which had only been in use for a few months. With the more painful subcutaneous method a number of patients ceased attending before they had derived much benefit, but with the almost painless intravenous one this was seldom the case. The most striking feature of the intravenous method was the occurrence of febrile and local reactions, the thickened tissues becoming swollen and soft and sometimes discharging numerous broken-down bacilli. These reactions were always followed by more rapid improvement and had never done any harm. The apparent local destruction of the bacilli through an intravenous injection of a vegetable substance was a most remarkable and encouraging sign. Very large nodules might be treated with advantage by injecting a few drops of a 1 in 1000 solution into them occasionally. The following table summarised the results of the treatment

Leprosy Cases Treated with Subcutaneous and Intravenous Injections of Sodium Gynocardate and Chaulmoograte.

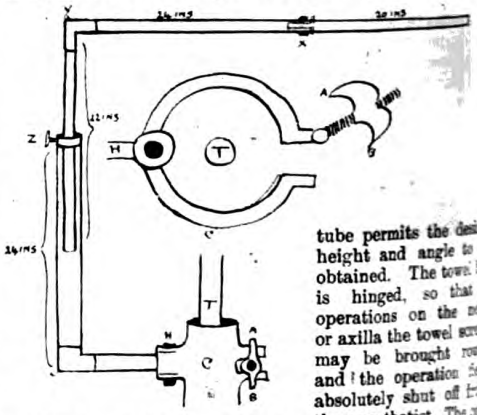
Duration of treatment.	Slightly better.	Much better.	Lesions disappeared.
3 to 6 months.	3	3	1
6 to 12 months.	3	3	1
Over 12 months.	2	2	1

of all the cases who attended for three months and upwards during the last two years, including both the subcutaneous and intravenous methods. A fuller account of the treatment, with brief notes of all the cases and some coloured illustrations and photos, is to be published in an early number of the *Indian Journal of Medical Research*. By "lesions disappeared" was meant the complete subsidence of the macules or nodules with disappearance of the leprosy bacilli, as shown by microscopical examination of smears and sections from the most likely looking places, in tubercular cases, and the disappearance of the discoloured patches and of the loss of sensation in the anæsthetic ones. The cases so classed included 7 tubercular and 3 anæsthetic cases, comparatively few of the latter type having been treated. The previous duration of the disease before treatment varied in the recovering cases from 2 to 6 months in two cases, 1 to 2 years in three, and in the remaining two cases 3 and 10 years respectively. It was still too early to say if the results would be permanent or to speak of cures. The speaker concluded that the problem of finding a completely satisfactory treatment of leprosy was not yet solved, but he thought that some progress had been made in the right direction by his investigations, which were being continued.

New Inventions.

A PORTABLE ANÆSTHETIST'S SCREEN

THE need for an adaptable method of shutting off the anæsthetist and the difficulty in so doing with the towel rails and supports obtainable, suggested the one here illustrated. The sketch needs little description. A trouser-press form of clamp attaches it to a leg of the operating table; a telescopic



A, B, Screw; C, clamp; H, hinge; T, table leg; X, hinge (with lateral movement); Y, fixed joint; Z, clamp.

tube permits the desired height and angle to be obtained. The towel bar is hinged, so that for operations on the neck or axilla the towel screen may be brought round and the operation field absolutely shut off from the anæsthetist. The cost of material is small, and it can be made by any metal-worker. The one illustrated was made in the workshops at the Military Orthopædic Hospital and is in use in the operating theatre there.

CHARLES T. W. HIRSCH,
Temporary Captain, R.A.M.C.; Anæsthetist, Military Orthopædic Hospital, Shepherd's Bush.
Hyde Park Gate, S.W.

Antipyrin, Phenacetin, and Pyramidon superseded.

CRYOGENINE

LUMIÈRE.

NON-TOXIC. EFFICACIOUS. HARMLESS.

Adopted by the French Ministries for War and the Navy, also by the Poor Relief Board. Papers on "Cryogenine" have been read before various Medical Societies by over 90 of the most eminent Continental Medical Men. In each paper clinical results of the most satisfactory character are recorded. "Cryogenine" is a white crystalline powder, odourless and almost tasteless; its chemical composition is Metabenzamido semi-carbazide.

Cryogenine has a high reputation as a

GENERAL ANTIPYRETIC and POWERFUL ANALGESIC.

FORMS.—Tablets, Pills and Powder.

LANCET, Dec. 18th, 1909, p. 1812: "..... The above case is one out of a number of successful results obtained from the use of this remedy (Cryogenine) contrasted with Pyramidon, which certain writers regard as the best drug for phthisical temperature. I think there can be little doubt 'Cryogenine' is the safer and more efficacious antipyretic. ....."

J. E. G———, M.D.

The SCIENTIFIC TREATMENT of INFLUENZA and Allied Ailments.

KINECTINE

According to Dr. MOUNEYRAT, the discoverer of Galyl and Hectine (the widely adopted Salvarsan Substitutes).

FORMULA:

Chlorhydrate of Quinine c. Hectine—i.e., *Benzo-sulfone-para-amino-phenyl-arsenate of Quinine.*

Non-toxic, produces no ill-effects.
Easily taken (tablets) and well tolerated.

Not only a prophylactic against but a specific in

INFLUENZA, CORYZA, MALARIA, HAY FEVER, &c.

RAPID ABORTIVE ACTION IN THE INITIAL STAGES.

CURATIVE ACTION IN THE ADVANCED AND CHRONIC CONDITIONS.

H.M. Ship ———, 27th July, 1917.

SIR,—I enclose P.O. for the tube of Kinectine. The drug has given every satisfaction.

W. B. H. W. (Surgeon, R.N.)

LITERATURE and CLINICAL REPORTS on REQUEST.

THE ANGLO-FRENCH DRUG CO., Ltd.,
(Late M. BRESILLON & Co.),
'Phone: HOLBORN 1311. **Gamage Building, Holborn, London, E.C. 1.** Telegrams: "AMPSALVAS, LONDON."

AMBRINE

mbrine is *the only Authorised preparation* of Dr. Barthe de Sandfort. We are compelled to state this, as there are various imitations.

Ambrine forms a dressing which INSTANTLY alleviates ain—promotes rapid healing—forms a sure protection gainst infection of the wound—can be removed without ain, hæmorrhage, or injury to the newly-formed tissues. he healing leaves no scars or contractions.

The most efficient means and method of ensuring active **yperthermal-Therapy** to the practical treatment of **heumatism, Gout, Arthritis, Varicose Ulcers,** and milar affections.



lay be applied with camel-hair brush, but our specially designed ay greatly facilitates the application of Ambrine, especially in the e of deep wounds or extensive surfaces.

K——, co. Tipperary, 8th Oct., 1917.

Dr. H—— returns thanks to the Anglo-French Drug Co., Ltd., for Ambrine and found it very satisfactory. Herewith enclose P.O.

OPOLAXYL

Rational Treatment of CONSTIPATION.

By the double action of secretions and peristalsis.

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines, with vegetable extracts of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen.

It is a normal regulator of the gastro-intestinal functions; consequently it improves the metabolic exchanges of the entire organism.

Opolaxyl does not lose its efficacy by prolonged use; its effect is gentle and constant, with the least irritation. It is not merely purgative; it stimulates the defective organs and revives the normal equilibrium; it has a lasting effect because it builds the organs, thus correcting diminutional function.

Opolaxyl is put up in small size tabular form and should be swallowed without crunching at bedtime or before breakfast.

DOSE—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

E———, Scotland, 9th Oct., 1917.

DEAR SIRS,—Having derived considerable benefit from the use of Opolaxyl tablets in my own personal case, I write as a practising physician to ask if you would make any reduction of price in the event of my sending you an order for a fair quantity, say, one dozen bottles.

Yours faithfully,

C. A——, M.D.

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Cadbury's Cocoa

IS ABSOLUTELY PURE

THE RECOGNISED STANDARD OF BRITISH MANUFACTURE.

MADE AT BOURNVILLE

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The Accepted Medication in

DIABETES MELLITUS

TRYPSOGEN materially improves digestion and nutrition; augments the supply of the internal secretion of the pancreas; depresses the relative adrenal hyperfunction; lessens polyuria; reduces specific gravity; decreases glycosuria, and often causes its entire disappearance.

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WE **do not** claim that Antiphlogistine cures rheumatism, but for more than twenty-four years physicians have been using it as an analgesic, palliative adjuvant in the successful treatment of this condition. We **do** claim that Antiphlogistine is the most efficacious local treatment that can be used in **rheumatism.**

Antiphlogistine



relieves the inflamed, swollen, and painful muscles and joints due to retention and impeded elimination of body waste, and opens the way to physiological repair.

Antiphlogistine does not interfere with internal medication.

THE DENVER CHEMICAL MFG. CO., BOW, LONDON, E. 3

THE LANCET.

LONDON: SATURDAY, NOVEMBER 3, 1917.

Life Saving at the two Extremes of Age.

Now that human life in its middle reaches is so precarious the world over, the saving of the infants and also of the veterans is a matter of enhanced importance. The infants have naturally claimed the larger share of attention, and the Medical Research Committee has rightly construed its obligation to the National Insurance Funds over which it has control by devoting time and money to an investigation of the Mortalities of Birth, Infancy, and Childhood, which forms the subject of a recent report (Special Series, No. 10). The introduction to this report contains philosophical reflections on methods and results to which all will do well to give heed whether they agree or not. The phrase "infant mortality" is characterised as confusing or meaningless in view of the variety and complexity of the separate factors involved in its causation. Attention is directed on one hand to the need for detailed analysis of the physiological qualities of the mother and child, of which our knowledge is still highly imperfect, and on the other hand to the careful classification of the various effects of environment and disease on these qualities. The familiar concept of the interaction between the factors of soil, seed, and climate, may well be transferred to the topic of infant mortality, and proper appreciation of this interaction and of the need for analysing it should attend any scheme for efficient work. The time has indeed gone by when mere repetition of the Registrar-General's gross figures in regard to infant mortality can serve any useful purpose save that of maintaining public interest.

The parties to the investigation contained in the report include Dr. W. A. BREND, a lecturer in forensic medicine who is also a barrister, Mr. LEONARD FINDLAY, physician to a children's hospital, and Dr. J. BROWNLEE, the director of statistics to the Medical Research Committee. The common conclusions, even though provisional, at which observers from such widely different standpoints arrive should command attention. All three agree in differentiating sharply between the deaths of infants in the first weeks immediately succeeding birth, the number of which remains surprisingly constant whatever the external surroundings of child-bearing, and the mortality in the later months of infancy and childhood, the figures for which have diminished during recent years in equally surprising ratio in all areas and under all conditions. Dr. BREND suggests that we shall name these two periods "birth mortality" and "mortality of early childhood" respectively. Two of the observers are able to see a prospect of considerable life-saving in the birth mortality group and even for a thorough study of all the general term prematurity the causation of the mo differing as it does so rural areas, Dr. BRE factors as operate b high mortality—e.g., hou points to atmospheric pollut factor in urbanisation in killing by this standard, the Meteorologica claim a front place in the campaign fo infant life, as was shown in a supplemen THE LANCET last week, comprising the report to that office of its Advisory Committee on Atmospheric Pollution. Dr. FINDLAY, on the other hand, sees no reason for giving up the idea that housing conditions play a prominent rôle in the mortality of early childhood in Glasgow. He points to the remarkable similarity in the curve of infant mortality rate when charted from year to year in the various areas of Great Britain and Ireland, and to the sobering effect which a study of this similarity should have on the claims made by local infant welfare schemes to have altered the curve for their own locality. Dr. FINDLAY says it hardly seems likely that any number of visits to infant clinics will ameliorate the health of the infant so long as it has to spend its time in unhygienic surroundings. Dr. BROWNLEE suggests the possibility that by plotting mortality curves we may obtain an indication whether a group of symptoms attending death is the result of one or several causes. He finds no clinical distinction between convulsions associated with pneumonia and convulsions associated with enteritis, and concludes that convulsions are more a pathological entity than is commonly believed. Diarrhœal diseases form a homogeneous statistical group, but the statistics of bronchitis and pneumonia suggest that these are two diseases of different etiology. The report as a whole is not a sweeping condemnation of the value of personal effort, as it might hastily be construed to be, but rather a powerful plea for the direction of this effort into the channels where it is likely to be most effective.

The prevention of senile mortality is a subject of which we hear less; in fact, the absurdity of the use of such a comprehensive term is more evident than in the case of infant mortality. We can hardly imagine any serious investigation into an alleged excessive death-rate among grandparents. But while the study of bills of mortality at advanced age may well lead to no useful result, the study in detail of the factors paving the way to a healthy senility has had obvious attractions for many a medical man whose own life has passed its zenith. Mr. T. BODLEY SCOTT returns again after an interval to this study in a recently published book on the Road to a Healthy Old Age.[1] To him the tragedy of old age helplessly exposed to the rough and chilly winds of life is at least unnecessary. It is useless to lament the deplorable wastage of health and happiness and time that is especially characteristic of old age without studying the means by

[1] T. Fisher Unwin, Limited. Price 4s. 6d. net.

which they may be prevented, and Mr. SCOTT deals first with the problem of food, finding that as age increases it is the quantity rather than the quality that matters. While with most of us as we grow older digestive power appears to improve and migraine and similar afflictions disappear, it should be clearly borne in mind that every excess in eating, as in drinking, leaves a mark on the reserve of power. He estimates that 50 per cent. of the deaths of people over 60 years of age are due to arterio-sclerosis, Bright's disease, or to the non-tuberculous chronic chest diseases which so often accompany them. To the sceptic who claims that the thickening of the arterial coats is nature's method of keeping up a failing circulation he replies Yes, but the sclerosis is itself a fault, to compensate in a measure for another fault, and it is our duty not to stand by and see a vicious circle go on to its end unbroken. Mr. SCOTT claims to have steered many sclerotic patients through dangerous areas of later middle life into the quiet and restful harbour of real old age free from paralysis and with mind unclouded. His claim demands attention in that he has preceded his treatment of the individual case with an analysis of the large factors involved. We do not compare the evidence which he is able to bring forward as to life-saving among veterans either in scientific standard or in inherent importance to the investigation undertaken for the Medical Research Committee into the mortality of infants; but none the less the subject is of great interest. There is much national value left in the healthy man and, in different spheres, perhaps, in the healthy woman of advanced age. That value should be saved.

Enemy Patents and Trade Marks.

A TIMELY and interesting paper was communicated recently to the Liverpool Chemists' Association upon the law relating to patents and trade marks, Mr. S. W. WOOLLEY, the author of the paper, making particular reference to the effect of existing legislation in the case of chemical preparations patented by Germans in the United Kingdom and sold under titles registered by them as trade marks. In this connexion he explained the process by which on the expiry of a patent an apparent, but not substantial, protection is afforded by a trade mark. This position affects manufacturers and dealers in other industries than drugs, but it applies more closely than to any other class of traders to those connected with the pharmaceutical industry, owing to the frequent use in pharmacy of names with which particular preparations become closely, if not indissolubly, associated. When the patents in such preparations expire, it becomes at once open to anyone to manufacture and sell what before was a monopoly. The trade mark, which may remain on the register, consists of a name, perhaps a very familiar name, and the manufacturer who wishes to make the article in question is deterred by the fear that unless he calls it by the title under which it has previously gone the sales will suffer greatly. But he learns that if he does employ the household name he may be exposed to costly litigation for alleged infringement of a trade mark. According to Mr. WOOLLEY, German manufacturers have taken advantage of this, and by free expenditure of money upon fees for counsel have made such cases as costly as possible, sparing no pains to protect and maintain a threatened monopoly.

The law does not, however, recognise, in the case of a lapsed patent, that the use of the name by which the article is known shall be, by itself, an infringement of the rights of the owner of the trade mark, and this information was well brought out by Mr. WOOLLEY in his paper by quotations from the judgments of several distinguished judges in reference to the point. A part of one such judgment runs as follows:—

"If the article is a patented article sold by the patentee under the name in question, then when the patent expires anyone is at liberty to make and sell the article, and to sell it by the name under which it has become known in the market: and if nothing more is done the patentee has no redress." (LINDLEY, L.J., in Powell *v.* Birmingham Vinegar Brewery Co., Ltd., 1896.)

Other judgments might be quoted of the same general opinion and equal clearness, and the impression left upon the mind by reading them is that we may easily exaggerate the deterrent effect of possible litigation in circumstances where the law is so clear. The most eminent counsel cannot do much for clients in face of directly adverse judgments concerning the identical main issue, nor are such advocates, being little anxious to conduct hopeless litigation, likely to advise that actions for infringement of patent should be brought in the circumstances that we are considering. Due weight must, however, be given to the saving clause which concludes the quotation from Lord Justice LINDLEY'S words. Nothing more must be done than to describe the preparation by the name which is claimed as common property, and the article must be that which the name designates and not something which merely masquerades under a borrowed title. In the above case in which Lord Justice LINDLEY gave judgment, the selling of a condiment as "Yorkshire Relish" was stopped by order of the court because the defendants could not show that they were making what had been known by that name but appeared to be "passing off" a compound which was intended to, and no doubt did, closely resemble the original. We may cite the headnote of an important case also decided finally in the House of Lords to show how far the law goes in this matter, and that it goes no farther.

"A trader has a right to make and sell machines similar in form and construction to those made and sold by a rival trader, and in describing and advertising his own machines to refer to his rival's name provided he does this in such a way as to obviate any reasonable possibility of misunderstanding." (Singer Mfg. Co. *v.* Loog, VIII. Ap. Ca. 15.)

In other words, if a maker adopts the name under which another has made a certain article known it may not be possible for the original patentee or owner of the trade mark to stop him. The new maker must not, however, cause it to be thought that

the original patentee is manufacturing what he is himself producing, and so add to his profits by trading on the reputation of another. It is, no doubt, to a certain difficulty in avoiding any suggestion of "passing off" that the danger of litigation referred to by Mr. WOOLLEY may be ascribed, and the best course for a manufacturer to adopt in the circumstances indicated would be to take the advice of counsel before embarking on his venture.

There is, however, a good deal in the suggestion made by Mr. WOOLLEY that the opportunity should now be taken under the Patents, Designs, and Trade Marks (Temporary Rules) Act, 1914, or by means of similar legislation passed to meet the requirements of a particularly important period in our industrial development, to purge the register of all marks which ought not to be there, in so far as they tend to hamper the otherwise permissible production of articles of public utility and benefit. In this category many chemical preparations from which German inventors have derived their full share of profit would undoubtedly fall. Apart from the above question, Mr. WOOLLEY'S lucid summary of the history of patent and trade-mark legislation will be found worth reading.

Annotations.

"Ne quid nimis."

VILLAGE SETTLEMENTS FOR THE DISABLED.

WE publish in another column the outline of a scheme which proposes to combine, in the interests of sailors and soldiers who have been disabled during the war, restorative treatment with industrial and social reconstruction. The aim of the scheme is to train certain of our victims in the world's catastrophe so that, being restored in mind and body, they may be fit subjects for settlement on the land, and may be the founders of small self-supplying village communities where local industries can be carried on. While the men are recovering physical power and mental balance they will be instructed in a suitable trade or in the practical business of agriculture. It is clearly no use to strain the strength of a man who is grossly disabled, but in many instances the régime of curative treatment found most appropriate for the case of the disabled man might be carried out while the man is learning his new trade, and, indeed, the course of his education might itself become a part of his regular therapy. Such a combination of physical, mental, and manual training would assist in the patient's perfect recovery and tend to make him a self-supporting citizen in a short space of time, for the technical instruction, itself perhaps a tedious affair, would not have to be wholly delayed for the long period that might elapse before the disabled man could fairly be held to have recovered. It appears in every line of the programme that the promoters of the scheme form a group of radical reformers whose socialistic sense is strongly developed, for they look beyond the healing and training centres which they propose to establish, and expect the advent of rural colonisation, when the village settlement, with permanent institutions, interests, and a corporate life of its own, will restore to the country something of that combination of simplicity and efficiency which is associated with the popular view of the "good old days." This in itself is interesting, for hitherto anything like approval of the rural life of sixteenth- and seventeenth-century England has been anathema to the reformer, whose familiarity with, and abhorrence of, the conditions of ignorance under the later phases of feudal rule blind him to the national value of the widespread happiness which accompanied that ignorance. What is wanted in our country districts after this war is the happiness without the ignorance, and such village settlements as are here planned might secure this event. The medical significance of the movement is striking, and as doctors we must all wish it well, for if it succeeded it would serve the purpose of rescuing from lives of great hardship and permanent sickness many thousands of our citizens who have been damaged in the war, and give them the opportunity, not only of leading useful lives, but of leading them in company with increasing and healthy families. The particular class of cases whom it is designed to care for are the sufferers from shell shock, neurasthenia and depression, cripples and men who have undergone amputation, and delicate cases recovering from disease or injury for whom life on the land is definitely prescribed by their medical advisers. It is clear that the Ministry of Pensions will have many thousands of such cases to deal with, and there is a risk lest the suffering men should not be got hold of by the authorities and allocated for special treatment. But if there is organised coöperation between those who are specially working in the interests of disabled service men we see no reason why many of our stricken fighters should escape a net widely spread for their advantage. Men crippled by wounds or wasted joints, if their injuries are carefully supervised by competent medical men, will be able to do much from the very beginning in outdoor life, and this, while improving them physically, will add to their happiness and conduce to their permanent cure. Others of the wounded will be country-born and will take to village settlements with a particular feeling that they have got where they are understood and where they can understand. In the absence of any definite information upon the financial side of so large a scheme more than this cannot yet be said; but here is a movement that should especially command the interest and support of our profession.

THE COUNTRY'S TRIBUTE TO THE SERVICES.

ON Monday last both Houses of Parliament passed a series of resolutions expressing the gratitude of the nation as a whole, through its representatives in Parliament, for the self-sacrificing labours of both men and women in the service of their country. The resolution which included the medical services was couched in the following terms:—

> That the thanks of this House be given to the officers, non-commissioned officers, and men of the British armies in the field, and also to the women in the medical and other services auxiliary thereto, for their unfailing courage and endurance in defending the right, amid sufferings and hardships unparalleled in the history of war, and for their loyal readiness to continue the work to which they have set their hands until the liberty of the world is secure.

In the Lower House the Prime Minister dwelt specially on the mitigation of the horrors of warfare achieved by the medical men, chaplains, and

nurses serving with the fighting forces, and his eloquent words will be found in the report of our Parliamentary Correspondent. Greater courage, knowledge, and experience than that shown by the medical services had, he said, never been seen. In the Upper House the Primate, in supporting the resolution, said that he noted with gratitude the references made to those who ministered to the bodies and spirits of those who served. Testimony was borne day by day to the value of the services of the medical men who had, at great sacrifice, given themselves to a task immense beyond all calculation.

NEW METHODS OF ANÆSTHESIA.

THE limitations to the use of nitrous oxide and oxygen in major surgery have to a considerable extent been removed by the technique introduced within recent years. Twenty years ago or more long operations had already been performed under this anæsthetic, but the inconveniences arising, not only from the number of cylinders required, but also from the light nature of the narcosis, prevented the method from being widely employed, in spite of the undoubted advantages so far as freedom from after-effects was concerned. To-day, by the use of preliminary narcotics, a more satisfactory anæsthesia is obtained, while the employment of rebreathing greatly diminishes the consumption of the gases and the need for enormous supplies of them. Captain H. E. G. Boyle, in the paper we publish to-day, has given a concise account of the results that he has achieved with this method and of the apparatus and technique involved. Even with these improvements, however, all anæsthetists of experience are aware that careful selection of cases is required. The type of operation and the type of patient must both be suitable if perfect results are to be obtained with nitrous oxide and oxygen. The field is much widened if a little ether or chloroform is introduced, but to our mind the proceeding then takes on a totally different character, and these cases should be clearly differentiated from those in which nitrous oxide is the only general anæsthetic employed. When ether or other similar drug is introduced into the circulation and a rebreathing process is in use it is impossible to say when the ether has been eliminated or what part it has played in the continuous anæsthesia. More than 30 per cent. of the cases related by Captain Boyle required this assistance, and these cases are not quite clearly separated from those in which nitrous oxide was relied upon alone. Again, as was pointed out by Mr. J. H. Chaldecott, the opportunity for successful use of continuous nitrous oxide is greatly broadened by the concurrent employment of local anæsthetics in the manner first introduced to practice by Crile. There are, however, surgeons who do not approve of the extensive local injections required at varying depths of tissue. Anæsthetists of to-day may, we think, congratulate themselves that the comforts of a non-toxic anæsthetic have been brought within reach of a very large proportion of patients undergoing operation. We have little doubt as regards the superior safety also of such an anæsthetic, in spite of the formidable list of fatalities collected in America, where this method has been very widely employed in major surgery. It is the details of the cases that alone can instruct us in this matter, and when such lists are examined from this point of view it will be found that the fatalities are mainly concerned with cases in which operation was extremely hazardous under any anæsthetic, or else that the patients were improperly selected for continuous nitrous oxide. There is no doubt that, as Captain Boyle points out, both in selection and in administration, experience care, and skill are essential where this anæsthetic is concerned. Another method of anæsthesia which, in quite a different manner, also aims at enhancing the safety and comfort of the patient has recently been described in our columns by Mr. H. M. Page, and is criticised to-day in a letter from Dr. F. E. Shipway. Here again we are dealing with an improved version of an old procedure. In this case, however, we think that the number of occasions in which the method concerned—rectal ether anæsthesia—is the most desirable that can be made use of is small. Our reasons for so thinking are largely indicated in Dr. Shipway's communication.

THE COMING MINISTRY OF HEALTH.

AT the conference of sanitary authorities convened on Monday last at the Mansion House by the National Association for the Prevention of Infant Mortality, Lord Rhondda, who presided at the afternoon session, took the audience into his confidence in regard to his own share in framing a Bill for a Ministry of Health. The Board of Education at first viewed with jealousy his proposal to coördinate all the health activities of the Government in one department, but before leaving the Local Government Board he had succeeded in coming to an agreement with Mr. H. A. L. Fisher on the sphere of their two departments in regard to child welfare work. The proposal to confer further powers on local authorities, enabling them to deal effectively with the interests of the mother and young child, had not been ratified by the Government solely on account of the differences which had arisen between the health departments of the Local Government Board and the Insurance Commissioners. The conference passed a resolution urging the establishment of a Ministry of Health, and appointed a small committee of its executive council to act in conjunction with Lord Rhondda in endeavouring to unite the opposing interests on an agreed measure. The memorandum which has just been issued by the Women's Coöperative Guild suggests a middle course which may well help such an agreement. While insisting that insurance must from the beginning form an integral part of a Ministry of Health, and that the medical side of the Poor Law must be separated from its unpopular features, the memorandum finds the arguments irresistible for making the Public Health services the basis of the Ministry. It is indeed gratifying to medicine to see such keen rival claimants to the care of public health, and we trust that any agreement reached such as was indicated by the Chancellor of the Exchequer on Tuesday, will not damp this public spirited ardour.

FOOD IN WAR-TIME.

ON Oct. 26th, at Gretna, a public lecture, under the auspices of the Chadwick Trust, was given by Professor D. Noel Paton, on Food in War-time. Shortage of food in the future was almost certain, the lecturer said, because (1) the world's production of food is decreased by diversion of labour from the land to armies, combatant and industrial; (2) the supplies are limited by the isolation of such food-producing countries as Russia; (3) the importation of food is decreased by decrease in the carrying tonnage due to diversion of shipping to military

urposes and to its destruction by the submarine ampaign; (4) the demand for food has increased ecause of the strenuous work which has to be one by the nation. It had been calculated that ie minimum requirement of the nation in food nergy units is something like 43¾ million million er year. How could the supply be maintained in ar-time? We had to recognise that the nation's ealth was not unlimited, and that, even if it ere, the supply of food purchasable is strictly mited. By scrupulous economy in all things, and pecially by avoiding all waste of food, we could ostpone the evil day and allow of victory being ained. Those who were well off and could afford excess of food over their requirements were obbing their poorer brethren if they consumed ore than they required. It was in the supply of ie essential breadstuffs that the danger lay. All ie Government could do was to secure a fair distribution of food between all classes. This would ean rationing, with all the expense and irritation an army of officials, unless voluntary conservaon of the food-supply were practised.

TRAUMATIC GLYCOSURIA.

THAT traumatism occasionally results in the pearance of sugar in the urine is a well-known ct to which a good deal of attention has been ven. Experimentally Brown-Séquard's observaon of the glycosuria following puncture of the urth ventricle is the classical example. The war turally affords a large field for the study of aumatic glycosuria, and in the *Paris médical* for t. 20th Dr. F. Rathery, a Paris hospital physician present in charge of a temporary hospital, cords the results of his observations of ore than 1400 cases of gun-shot injury. ycosuria appeared in 4·2 per cent. of these. was noticed especially in association with ultiple wounds of the extremities and was t more frequent in wounds of the head than other parts of the body. No relation of the ycosuria to the gravity of the individual wound s observed. The quantity of sugar rarely ceeded 20 gm. in the 24 hours, and was generally om 3 to 4 gm.; its appearance was often intertent, and the final disappearance as a rule sudden. e two most protracted examples were both in ses of injury of the lower extremity: one of se lasted 24 days and the other 6 months with ermissions. In no single case did progressive betes follow the traumatic glycosuria. Professor thery's observations form a useful contribution a subject of considerable clinical and experintal interest.

HE INTERNAL SECRETION OF THE REPRODUCTIVE GLANDS.

T is a drawback to the experimental method, as actised on lines of Baconian induction, that yone may make a few random experiments and h the results lay some sort of claim to general ention. Hence we should preserve a carefully tical attitude towards claims to medical discovery til some circumstance evinces the likelihood of ne truth in them. Lately[1] the physiological work of inach, Foges, and Lode has come in for repeated cussion. Steinach described having changed the ual disposition of small mammals by implant, as the case might be, an ovary into a young le or testicular substance into a young female. When the necessary operations were successful the treated animals in their sexual behaviour showed reversal of the natural conditions, males attempting to mate with males and females with females. But (a very important point) such was the case only if the young animal so treated had been first deprived of its own primary reproductive gland—i.e., if it had first been castrated or spayed—otherwise the implantation had no feminising or masculinising effect. It was, in short, as though a clear field was necessary for the exogenous influence. Around these findings the theory has been constructed that the products of internal testicular and ovarian secretion—that is, the specific reproductive hormones of the two sexes—are sharply antagonistic the one to the other. Their effect on the brain, from which the sexual impulse proceeds, is described as an "erotising" one, in the direction of masculinity or femininity respectively. The mode of action is supposed to be bio-chemical. The conclusions want more evidence to back them.

[1] Zeitschrift für Sexualwissenschaft, August, 1917.

THE next session of the General Council of Medical Education and Registration will commence on Tuesday, Nov. 27th, when the President, Sir Donald MacAlister, will take the chair at 2 P.M.

THE FitzPatrick Lectures of the Royal College of Physicians of London will be delivered at the College on Nov. 13th–15th, at 5 P.M., by Dr. Arnold Chaplin, who has chosen as his subject "Medicine in England during the Reign of George III."

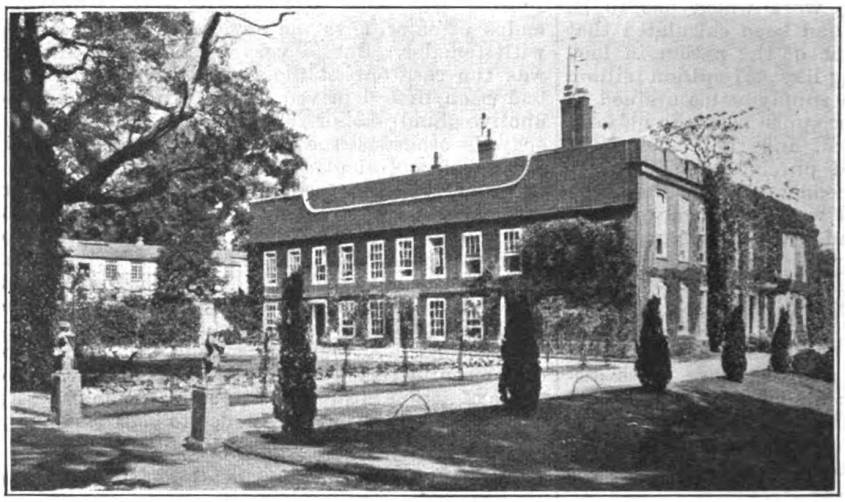
THE QUEEN'S HOSPITAL, FROGNAL, SIDCUP.

UNDER the patronage of the Queen, the Queen's Hospital, Frognal, Sidcup, is now established for the reception of cases of injuries to the face and jaw, and established as the centre for the treatment of these interesting and painful cases, to which all the worst examples will surely be attracted. It is, moreover, the object of the Presidents of the institution—viz, the Director-General and the late Director-General of the Navy Medical Service and the Director-General of the Army Medical Service, assisted by a strong committee, to give to the institution an Imperial scope, and to see that it shall receive from the Expeditionary Forces all the wounded who clearly fall under the indicated category, and that it shall be in touch with colonial centres for similar cases. There will also, it is hoped, be developed a system of convalescent homes for treatment of patients in various stages, and facilities will be provided for their after-education. All this is now definitely inaugurated at Frognal, though the indicated developments have yet to take shape.

Historical Outline.

The history of the institution dates from November, 1915. The organised work for the care and treatment of facial and jaw injuries had already been started in France. To Major H. D Gillies, R.A.M.C., who had seen the results obtained by Morestin, Valadier, and others, when he was serving with the Red Cross in France, belongs the credit of introducing to the British Director-General of the Army Medical Service the possibilities of enormous amelioration in the conditions underlying the plight of some of the most sadly wounded of our sailors and soldiers. A beginning was made at once at the Cambridge Hospital, Aldershot. Major Gillies having 200 beds allotted to him, but hundreds of cases arriving from all parts of the various fronts had to go elsewhere. Through lack of accommodation the arrangements at Aldershot were ill-fitted for the proper development of facial, jaw, and cosmetic surgery; moreover, it was found that such patients as were admitted did not do well in the absence of congenial environment at Aldershot. Sir Arbuthnot Lane early in the proceedings had been asked by the

FIG. 1.



South-east aspect of Frognal House.

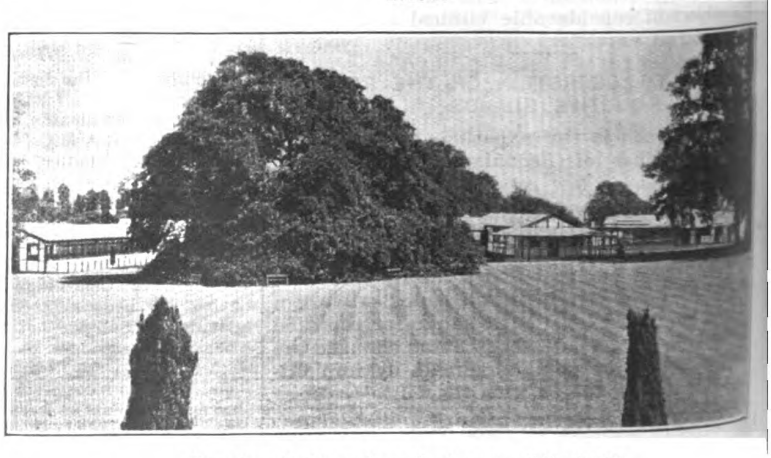
Director-General to act as a general consultant and supervisor of the movement, and without his driving force and unselfish employment in every direction of wide influence the quick success, now to be chronicled, would not have come. It was decided quickly, and on all grounds of efficiency and utility, to emigrate to a more satisfactory and adequate site. Excellent work was being turned out from Aldershot by Major Gillies, Captain Tuddihope, Captain J. L. Aymard, Captain L. A. B. King, Captain Kelsey Fry, and others, assisted by the drawings of Professor Henry Tonks, F.R.C.S., but it was obvious to everyone that better, far better, things could be done in more suitable surroundings.

An attempt on the part of Major Gillies to place some of the patients at Aldershot in a convalescent home led indirectly to the movement of the hospital from Aldershot to Sidcup. Many of the disfigured patients suffer from acute depression, and are so conscious of their affliction that they refuse to return to their homes and friends until they are convinced that everything possible has been done for them, and therefore the question of a convalescent home was a very important one when the patients were living in the crowded atmosphere of Aldershot. In reply to representations that help was sorely needed, Lady Rodney and Mrs. Bertram Corbet proposed to put up 35 to 50 bad cases at Great Alresford; and also these ladies, and with them Lord Clarendon, approached Mr. C. H. Kenderdine, the honorary secretary and treasurer of Queen Mary's Convalescent Auxiliary Hospital, Roehampton, to ascertain whether some centre, similar to that devised at Roehampton for limbless sailors and soldiers, could be started for those unfortunates whose faces were mutilated by loss or deformity of features. Mr. Kenderdine advised that a far more ambitious undertaking than the original proposal to find temporary accommodation for convalescents should be organised. He suggested that Frognal House, Sidcup, the residence of the late Lord Sydney (Fig. 1), could be secured with the consent of the present owner, Mr. H. S. Marsham-Townshend, and he strongly advised the building of a new hospital in its beautiful grounds (Fig. 2), using the mansion as an administrative block, containing the mess-rooms of the convalescent officers and the living accommodation of a full nursing staff. This advice was followed, and Mr. Kenderdine worked hard and successfully to give full effect to it. Indeed, the hospital from its business side may be said to own its fortunate status to Mr. Kenderdine's exertions and experience. So now, under the surgical superintendence of Sir Arbuthnot Lane, a complete hospital, with 320 beds for patients and every facility for treating and nursing them has been established in the beautiful eighteenth-century mansion and its picturesque grounds. It is impossible to exaggerate the value to the growth of this great undertaking of Sir Arbuthnot Lane's tireless energy. How much time he has devoted to the hospital it would be difficult to guess, and at his numerous informal consultations questions of the most various sort connected with the welfare and future growth of the hospital have been freely debated, so that the whole staff know that in him they have a thoroughly well-informed as well as a fair adviser.

The Present Staff.

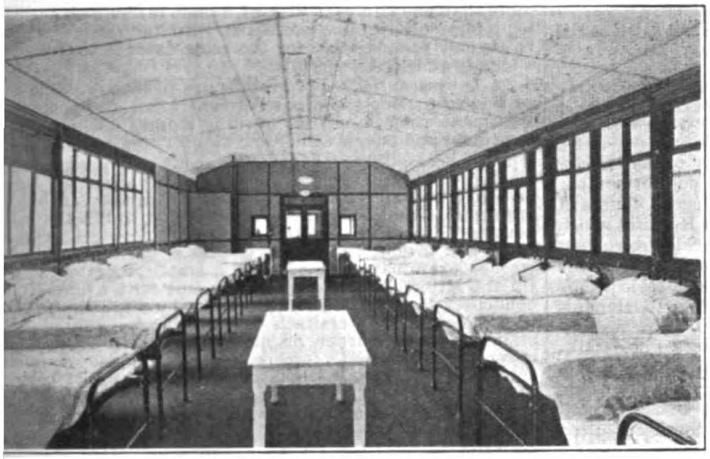
The roll of officers now doing duty at the Queen's Hospital is as follows: Lieutenant-Colonel J. Colvin, commandant; Major H. D. Gillies, plastic surgeon; Captain W. Kelsey Fry, R.A.M.C., dental surgeon; Captain C. F. Rumsey, R.A.M.C., plastic surgeon; Captain J. L. Aymard, R.A.M.C., aural specialist; Lieutenant G. Seccombe Hett, R.A.M.C., aurist; Lieutenant R. Wade, anæsthetist; Lieutenant G. C. Birt, plastic surgeon; Lieutenant H. C. Malleson, plastic surgeon; Captain E. W. Lowe, attached R.A.M.C., dentist; Lieutenant A. L. Frazer, attached R.A.M.C., dentist; Captain A. Jupp, attached R.A.M.C., dentist; Major J. C. Duff, Rifle Brigade, attached R.A.M.C., quartermaster; Lieutenant R. M. Montgomery, surgeon; Lieutenant H. Johnstone, radiographer; Captain Robertson, dentist; and Captain J. C. Clayton, R.A.M.C., anæsthetist. Sir Francis Farmer and Mr. J. F. Colyer have joined the staff of the hospital as consulting dental surgeons. The hospital is fortunate in its commandant, for Colonel Colvin has been alike a most competent and energetic administrator and the sympathetic promoter of all the scientific developments of the place. At the present moment the

FIG. 2.



New hospital seen from the terrace of the house.

FIG. 3.



One of the larger wards.

beds in the hospital include 27 officers, of whom 15 are
ıuts and 12 convalescents in the main building.

The Scope and Aims of the Hospital.

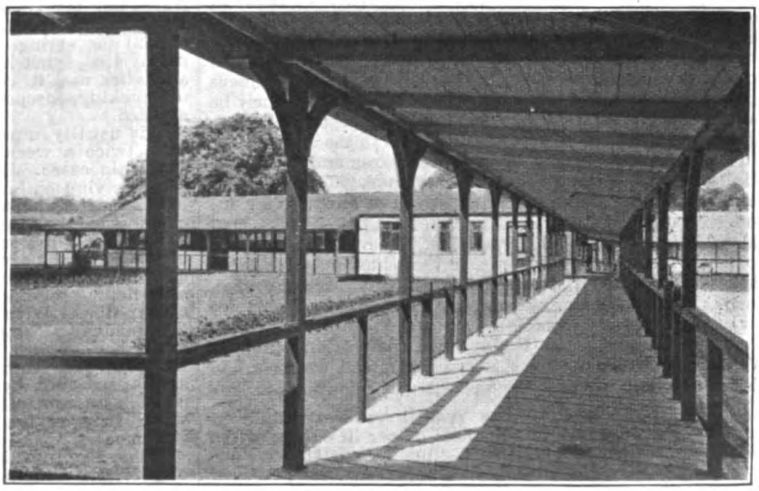
'he hospital has been built in the grounds, with every con-
'able convenience in the way of wards, operating theatres,
tal rooms, X-ray rooms, and so on. The transference of
cases from the Cambridge Hospital, Aldershot, was com-
ied on August 22nd last. The hospital has now 346 beds
officers and men, with another 12 beds for convalescent
ers. Instructions have been issued by the War Office
all facial and jaw cases should be sent to the Queen's
pital, which is intended to have 550 beds, and to be the
tral institution for the treatment of this class of injuries.
hospital is in good railway communication with Dover,
there is more delay in transferring to Sidcup the patients
are landed at Southampton or at ports further west; but
wbacks of that kind may be expected to disappear, as the
efits to be derived by prompt and proper treatment at the
en's Hospital become common knowledge. It is hoped
straightforward fractures of the jaw and other cases will
isposed of at the hospitals affiliated to the Queen's Hospital
ie neighbourhood—namely, the Croydon Hospital, Section
and the Ontario Military Hospital for Canadians, Orpington;
scheme of amalgamation like this were perfected there
ld be a total joint institution of some 1250 beds.
South African, Canadian, Australian, and New Zealand
editionary Forces would thus re-
rce the Queen's Hospital staff with
most experienced of their respec-
surgeons and dentists in the kind
vork that is being done, and the
at the Central Hospital would
me an Imperial staff.

he central hospital building, an
r of iron and concrete, stands in
beautiful grounds of Frognal, and
ough it is quite new and very
nsive, it does not detract from the
ral beauty of the scene in the least
It is built in form of a narrow
eshoe, whence wards of various
and with different special
cts radiate connected by long
ded corridors. The trees and
greens of the grounds grow up
ng the buildings, affording pleasant
e and pretty views immediately
out the doors of the wards. (Figs.
nd 4.). A farm of 100 acres is
ched to the house, where the men,
a view to their future employment,
be instructed in outdoor occupa-
, such as gardening, market-
ening, dairy work, poultry keeping,
forestry, &c. In addition, workshops will be provided for practical instruction in estate carpentry and other handicrafts, and work in connexion with electricity, agricultural machinery, and motor traction. All this work of after-education is in contemplation.

Liberal grants have been made to the hospital by the British Red Cross Society and the National Relief Fund. The committee of the National Relief Fund have agreed to purchase Frognal and about 90 acres of land and to hand it over to trustees for use as a facial and jaw hospital, with the proviso that, if its employment in this direction should be discontinued, the buildings and amenities will then be devoted to some purpose of national health.

Among our wounded sailors and soldiers none, perhaps, deserve our sympathy and compassion more than those who have suffered grievous facial injuries, in many cases of such a nature as to render them at first unrecognisable. Surgical skill properly applied avails to relieve immediate suffering, but cases of this character require continuous and special care during a long period of convalescence. Surgery to-day can effect cures in a large proportion of cases which two or three years ago would have been considered hopeless instances of facial mutilation. This is excellently demonstrated by the specimens at the War Museum now on view at the Hunterian Museum of the Royal College of Surgeons of England; but for these splendid results sufficient time and careful nursing are necessary; experience shows that frequently a period of from one to two years is required to build up and restore the features of men who would otherwise be permanently disfigured. No effort should be spared to give these men a fresh interest and a new start in life, lest many drift to the towns on their discharge from the Services, only to become mere objects of pity and recipients of charity, when with the right treatment surgically and proper after-care and attention to their future employment they might become good citizens. The Queen's Hospital at Sidcup proposes, if the necessary coöperation is forthcoming, to be not only the scientific seat of this surgical work, but the organising centre for long courses of convalescent treatment, and an educating force for the future benefit of its charges. A large programme, but one that can be carried out by an energetic management. The clinical outcome is already wonderful, as will be seen from some of the records that we shall shortly publish in THE LANCET.

FIG. 4.



A corridor.

THE CONTROL OF VENEREAL DISEASES.

THE VENEREAL CLINIC: ITS ORGANISATION AND ADMINISTRATION.

BY H. WANSEY BAYLY, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, R.A.M.C. (T.); MEDICAL OFFICER IN CHARGE VENEREAL DEPARTMENT, ST. GEORGE'S HOSPITAL; LATE PATHOLOGIST TO THE LONDON LOCK HOSPITALS.

WHEN on my return from France I was passed fit for light duty at home I was permitted, by the courtesy of the War Office, to accept the post of medical officer in charge of the new venereal department at St. George's Hospital which was about to be inaugurated under the Local Government scheme. For my military duties I was attached to the Military Hospital, Rochester-row, S.W. (Venereal), where I have had the privilege of serving under Lieutenant-Colonel L. W. Harrison, D.S.O., R.A.M.C., whose experience in every aspect of the working of a venereal hospital—whether pathological, clinical, or administrative—is probably unequalled by any military officer or civilian practitioner in this country. Having enjoyed this double advantage of both military and civilian experience, and having been entrusted with the organisation and administration of a new clinic for the first nine months of its existence, I venture to hope that my experience may be of some help to medical officers who are organising similar clinics in various districts.

When I undertook the work at St. George's Hospital I anticipated but a very slow growth of the department and thought that 200 patients would be the outside figure for the first year. This number was, however, passed in the first six months. Discharges and new patients are now about balancing one another, so I have arranged the clinic on a basis of 400 cases per annum. I have endeavoured to organise the treatment as nearly as possible on the lines recommended by Lieutenant-Colonel Harrison, but as the department is essentially an out-patient one, and I have only four beds available for indoor treatment, I have been obliged to modify the procedure in some slight degree.

In a military hospital devoted to the treatment and research on venereal disease only, well provided with personnel and apparatus, and with plenty of available space for laboratories, treatment rooms and inspection rooms, where the patients are at hand and under discipline, both the study and treatment of venereal disease can be carried on under nearly ideal conditions. That the patients are all of one sex and the nurses are male also facilitates rapid work. In most civilian hospitals at present male nurses are almost impossible to obtain, and, as a rule, female nurses attend to both male and female patients. The laboratories also are frequently remote from the venereal department, and are closed during the hours of the evening venereal clinics.

In order to insure that there is no delay in commencing treatment in cases with infectious lesions, it is essential that examination for the presence of the *Spirochæta pallida* and gonococcus should be made at the time of the examination of the patient. Since little apparatus or space are required for these examinations, they can conveniently be made in the consulting room. Immediate examination of the blood or cerebro-spinal fluid for the Wassermann reaction and cell counts are not practicable, nor necessary; the specimens obtained at the clinic for these purposes can conveniently be referred to the nearest laboratory and the report will be to hand when the patient pays his next visit to the clinic.

I find it impracticable to mix the sexes, and have two clinics a week for men and two for women. The most convenient hours for my male patients are, as a rule, 6 to 9 P.M., and this applies to the majority of female patients. A considerable number of women patients, however, have to be at home in the evenings to prepare their husbands' food, put their children to bed, &c., and can only attend in the afternoon. The afternoon, also, is obviously more suitable for juvenile patients. I therefore have a male clinic from 6 to 9 P.M. on Mondays and Fridays, a female adult clinic on Wednesdays from 6 to 9 P.M., and a mixed women's and children's clinic from 2.30 to 5.30 P.M. on Fridays.

(1) *Staff.*—The staff of the special venereal clinic at St. George's consists of the medical officer in charge of the clinic, one male and one female clinical assistant, one dispenser, one sister, one nurse, and a porter. The medical officer in charge, dispenser, sister, and porter are permanent officials, while the clinical assistants and nurse hold these appointments for three months. If the work of the department and the financial grant does not require or permit of more than one clinical assistant, a male rather than a female is preferable, as a male can assist with both sexes, while it is obviously inadvisable for the male cases to be treated by a female assistant.

(2) *Accommodation.*—Five rooms are necessary. One consulting-room, one syphilis treatment room, one gonorrhœa treatment room, and two waiting-rooms, one for before treatment and one in which to rest after treatment.

(3) The *consulting-room furniture and outfit* are very simple. They consist of a table, a few wooden chairs, case sheets or books, red and black ink, tongue depressor in bowl of antiseptic, a bowl of antiseptic in which to dip the hands between cases, two pairs of rubber gloves, a washing basin and towels, two linen gowns, a flash-lamp, a plain wooden examination couch, and a small laboratory bench. On the latter are two microscopes (one with a dark-ground condenser for examination of spirochætes and one ordinary bacteriological for stained specimens), a suitable light, stains, Bunsen burner or methylated spirit lamp, slides, cover-glasses, Cornet's forceps, platinum needle, small flat squares about 3 inches by 3 inches, some slips of blotting paper for drying slides, and a small bowl of antiseptic into which to throw slides that have been examined.

The *gonorrhœa treatment room* should be provided with a sink and washhand basin, an examination table with knee crutches for female patients, and two or three irrigation apparatus hung by pulleys from the ceiling, and fitted with rubber tubing and nozzles for irrigation of urethra and bladder. I have devised a portable irrigation sink at which the male patient stands during irrigation; it obviates splashing of the floor and the fluid is collected in a bucket placed underneath it. The examination table, irrigation outfits and irrigation sinks were supplied to me at a reasonable cost by the Holborn Surgical Instrument Company.

The *syphilis treatment room* should contain two or three couch tables for the treatment of female cases. The male cases can be given intravenous salvarsan substitute in the sitting position with the arm resting on a small table, and the intragluteal injections of mercurial cream can be given in the standing position. I find that novarsenobenzol (Billon) gives as good results as any other preparation; it is also less irritating should there be any local leakage, is less frequently followed by annoying symptoms of reaction than most other preparations. It is extremely soluble and does not require neutralising. This preparation, also, when administered intramuscularly in an emulsion with creocamph according to Lieutenant-Colonel Harrison's method, is very well tolerated, and is only followed by severe pain in a small percentage of cases. I have discontinued using "galyl," as I find this preparation has less spirochæticidal power and is more often followed by both pathological and clinical relapse. It is more expensive than novarsenobenzol.

Every ampoule must be carefully examined before use for any crack or flaw in the glass, and the canary-yellow colour noted as the tinge deepens to orange if the vacuum has become destroyed and oxidisation has taken place. Also at the moment when the neck is broken off a characteristic "pop" should be heard. For intravenous administration each 0·1 grm. of novarsenobenzol, which we call NAB for short, may be dissolved in about 1 c.c. of sterile distilled water, but twice this concentration can be used without fear. The NAB can be administered intravenously or intramuscularly with a 10 c.c. record syringe. It is unnecessary to boil the syringe every time before use: if it be kept in methylated spirit and washed out with sterile water before and after use, it remains quite aseptic, and the danger of cracking, inseparable from sterilisation by boiling, is avoided.

It is usually impossible for the patients to attend oftener than twice a week, which is quite sufficiently often for syphilitic cases. Indeed, after the first week, unless they are receiving half-doses twice a week, which I think gives better results than the full dose once a week in very chronic cases (such as interstitial keratitis, chronic superficial glossitis, gummatous infiltration of the testicle, or lesions of the central nervous system), one visit a week is quite enough. No home treatment other than a mouth wash and a medicine containing pot. iod. is usually required for cases of syphilis. With gonorrhœa, however, efficient home treatment is necessary, and both male and female patients must be supplied with suitable apparatus for efficient irrigation of urethra or vagina. I have made arrangements so that patients, by depositing 2*s.* 6*d.*, can obtain the use of such an apparatus, the deposit being returned to them when they return the apparatus at the end of their treatment.

Either I or my clinical assistant demonstrate the method of posterior irrigation to the male patients and a nurse to the female patients.

In cases of gonococcal vulvitis and vaginitis in young ıildren the mothers are instructed how to irrigate with ɔt. permang. and then fill the vagina with protargol ɔlution and hold the child's legs up high for a quarter of an ɔur afterwards, so as to prevent the protargol escaping. It obviously useless to attempt to treat gonorrhœa at the inic unless the patients are carefully instructed as to home eatment. One or two visits to the clinic weekly will be ıite sufficient for other treatment, such as swabbing cervix vagina, massage of prostate, bougie dilatation, adminis-ation of vaccines, &c. The patients must be instructed to ɔld their water for three or four hours before coming to the inic in order that urethral discharge, turbidity of urine, reads, &c., can be investigated at each visit.

Instruments.—I have found the following list of instruments d glass to be sufficient for the work of the clinic.

Instruments.

- st Ferguson's specula.
- air vulsellum forceps.
- 'layfair's probes.
- airs t-mpon forceps.
- male catheters.
- st metal bougies, curved, 2/5 to 17/20.
- st metal bougies, straight, 2/5 to 17/20.
- t Harrison's gum elastic whip bougies 1-6.
- ollmann's dilator for prostatic urethra.
- ethroscope and battery.
- rethral swab holders.
- t scalpels.
- 1 urethral electric cautery and holder.
- 3 conical-nosed glass urethra syringes.
- 3 1-c.c. glass syringes.
- 3 10-c c. record syringes.
- 1 steriliser.
- 1 pair dressing forceps.
- 1 pair dissecting forceps.
- 1 pair instruments forceps.
- 6 gum elastic catheters.
- 1 tongue depressor.
- 2 pairs scissors.
- 3 enamelled trays.
- 1 instruments cupboard.

Glass.

- 2 2-pt. measuring glass jugs.
- 1 2 urine glasses.
- 2 2-oz. glass measures.
- 12 Janet's urethral cannulæ (male).
- 6 female catheters.
- 4 glass bowls.

'he total initial expenditure in surgical instruments, roscopes, irrigators, examination tables, glass, and aratus and furniture supplied by surgical instrument-kers will be about £100.

outine of examination, &c.—The patients are admitted to consulting-room in rotation and time is saved if the old s are seen first, for they can then receive their routine tment from the clinical assistant while the new cases are ıg examined by the surgeon. Every new case has his ıe and address entered by the surgeon in the identifica- book, and this book is kept privately by the surgeon his own personal reference only. The patient is then n a small card of a different colour for the two sexes, vhich is printed the hours and days of the clinic. The ent's number is written on the back of this card, which akes away with him. He is also given a prescription c, on which his number is written, in which is entered medicines, lotions, or ointments, mouth-washes, &c., are prescribed for home treatment. This book is pre-ed by the patient to the dispenser, who gives him the icaments ordered, and at the end of the clinic hands the s to the porter, who files them. On subsequent visits patient presents his number card to the porter, who hands him his prescription book, which the patient s to the surgeon when he enters the consulting-room. ter entering a new patient's name and address in the ification book the surgeon examines the patient and s the particulars in the case-book. These particulars prise personal and family history, history of infection onset of symptoms, and condition at time of first idance. The case-sheet also contains columns for ment, progress, complications, and pathological exa-tions. Male cases should be examined nude and utine investigation made of anus, mouth, throat, um, skin, and lymphatic glands. Female cases should ıvestigated on the examination table as a matter ıtine, as but little reliance can be placed on the patients' ments, and quite frequently vulval or anal lesions or a ed vaginal discharge are found to be present in patients have stated that no such conditions existed. If the ge of a vaginal speculum is tolerated, one should be d as a matter of routine, and the cervix and os uteri ully examined. Any discharge from cervix or urethra be examined for the presence of gonococci. As a er of routine, blood is taken for the Wassermann re- in every case of lesions that might possibly be syphi-The exudate from lesions which are suspected to be of rly syphilitic nature is always examined for the *Spiro- pallida*, and in every case of possible gonorrhœa the ral discharge is examined for gonococci and the urine reads and turbidity.

m myself of the opinion that a patient should not be ed as a syphilitic until the diagnosis has been fully ished, and for this I consider that often both clinical athological evidence is required. A typical primary in conjunction with delayed onset after exposure to ion and typical adenitis may be taken as conclusive, as may also the presence of typical *Spirochæta pallida*, but the identification of the *Spirochæta pallida* is not quite so easy as some imagine and the inexperienced may easily confuse it with some of the other spirochætæ so frequently found in inflammatory or ulcerative lesions.

Unless the greatest care has been spent on the titration of reagents I consider the Wassermann reaction quite unreliable from the diagnostic point of view unless strongly positive, and I am personally of the opinion that very occasionally even a strongly positive Wassermann reaction may be produced by tissue changes that are other than syphilitic in origin.

My opinion as to the great value of the Wassermann reaction for controlling treatment and as an aid to diagnosis remains unaltered, but the general tendency of practitioners to consider any blood test returned as "positive" as conclusive evidence of syphilis in the absence of any other signs or symptoms, appears to me to show a degree of faith that may not be justified.

Every patient who has received an injection of salvarsan substitute at his last visit should be interrogated as to symptoms of intolerance and reaction, comprising vomiting, rigor, eyes, diarrhœa, headache, urine, pain, and skin lesions. The urine should be examined for albumin before an NAB injection is given, and old cases have their weight taken and their urine examined always before they enter the consulting-room. I have a "reaction" column in every case-sheet with initial sub-headings—V., R., E., D., H., U., P., S. for the symptoms mentioned above, and I enter ++, +, ±, − under these headings at every visit, indicating severe, marked, slight, or absence, so that a glance at the case-sheet shows me at once whether the patient is tolerant or intolerant to the drug. If there are any marked symptoms of intolerance the dose is either omitted or reduced. In-patients should have their temperature recorded every four hours, as pyrexia is another symptom of intolerance of considerable value.

The patient should fast for three hours before and after receiving an intravenous injection. The regrettable occurrence of severe or even fatal crises that used some years ago occasionally to arise with most syphilologists with an extensive series of patients under salvarsan treatment was, I think, due to our lack of knowledge and experience as to the warnings of commencing intolerance. No definite course of injections can be rigidly adhered to, though the intravenous course recommended by Lieutenant-Colonel Harrison as suitable to the majority of cases can usually be tolerated. This course consists of three injections of 0·45 grm. NAB in the first eight days with four-day intervals; then a rest for a fortnight and two injections of 0·6 and 0·75 grm. at a weekly interval; then another fortnight's rest followed by two weekly injections of 0·9 grm. This course therefore consists of seven injections of NAB (4·5 grm. in all) spread over two months. Children tolerate the drug well and should receive doses proportional to their age, as with drugs given by the mouth. A weekly intramuscular injection of 1 gr. Hg is given. Any sign of intolerance to either arsenic or mercury requires a modification of this scheme. Occasionally a patient is met who shows no intolerance to the arsenic beyond an acute vaso-dilator crisis immediately after injection, with flushed face, swollen throat, and streaming eyes and nose. If five to ten drops of adrenalin, 1/1000, be injected subcutaneously five minutes before the administration of the NAB, the recurrence of these symptoms with the next injection can usually be prevented.

In 1913 I published a paper in THE LANCET on the dangers and complications of salvarsan treatment, and mentioned six cases that had caused me grave anxiety out of a series of 1000 injections. At that time I advocated giving two maximum doses (0·6 grm. salvarsan or 0·9 grm. neosalvarsan) at 48 hours' interval at the commencement and conclusion of a three months' course of mercurial injections. Although I found that this scheme gave excellent therapeutic results, and was well tolerated by the very great majority of cases, I had to give it up, in view of the six cases mentioned above and one fatal case that occurred shortly after the 1100th injection.

In over 2000 injections that I have had under my treatment at St. George's and Rochester-row Hospitals during the last nine months, by adopting Lieutenant-Colonel Harrison's scheme and keeping a sharp look-out for all the different symptoms of intolerance, I have met no case that has caused me any serious anxiety, and the therapeutic results have been quite satisfactory.

I consider that it is quite safe to treat syphilitics under intravenous injections of NAB as out-patients, provided that they are kept lying down and under observation for an hour after each injection. If they then feel well, they can be permitted to proceed to their homes, but they should be detained in hospital if any marked symptoms of reaction become manifest.

With a clinic of 400 cases per year, as the average period for attendance is two months, there will be 66 patients attending

at any one time, and these spread over four clinics per week mean an average attendance of about 20 at each clinic. All gonorrhœa cases and syphilitics for the first week attend twice a week. Four beds—that is, 6 per cent. of the number of patients attending—will be found to be quite sufficient.

Those requiring admission will be: (1) Patients with severe reaction after injection with NAB; (2) female patients with inguinal abscesses, extensive ulceration of vulva, or abscess of Bartholin's gland; (3) male patients with acute epididymitis, cystitis, or prostatitis, extensive or phagedenic sores of penis, bubo, or retention of urine.

Lancashire County Scheme.

Progress is being made in the organisation of a scheme by the Lancashire County Council. Provisional arrangements have been entered into for the bacteriological examination of specimens at the Universities of Liverpool and Manchester, and the laboratory of the Public Health Department of the Burnley Corporation. In addition, negotiations are well advanced with the boards of management of seven public institutions in various parts of the county for the establishment of treatment centres; and, further, a working arrangement has been provisionally agreed upon with the health authorities of three of the Lancashire county boroughs. The total cost of the scheme is estimated at £14,000 a year.

Enlightenment Campaign in Glasgow.

The Glasgow and West of Scotland Branch of the National Council, of which Dr. A. K. Chalmers is honorary secretary, have arranged a series of lectures for the purpose of instructing public opinion. The first of these will be delivered in the M'Lellan Galleries, 270, Sauchiehall-street, to-day, Friday, Nov. 2nd, at 8 P.M., on "The Social and Administrative Aspects of Venereal Diseases," by Sir Malcolm Morris. Two lectures will follow, specially designed for those interested in educational work, in the Masonic Halls, 100, West Regent-street: on Nov. 9th, "Responsibility of Parenthood," by Dr. Winifred Cullis, D.Sc.; Nov. 16th, "Medical Aspects of Venereal Diseases," by Dr. Harriet Mackenna, the time in each case being 8 P.M.

Council Schemes in Ireland.

The Irish Local Government Board issued last week a circular to sanitary authorities of county boroughs, county councils, governing bodies of hospitals and infirmaries, and boards of guardians in regard to venereal diseases, announcing that the measures already adopted in Great Britain are to be extended to Ireland, and that the Board will pay 75 per cent. of the cost. Sanitary authorities are directed forthwith to prepare draft schemes for the Board's approval, and it is pointed out that time will be saved if they enter at once into preliminary negotiations with the authorities of hospitals and universities for the necessary facilities for diagnosis and treatment. Regulations are submitted (under Section 148 of the Public Health (Ireland) Act, 1878) for county boroughs, and draft regulations are sent for county councils, as well as a memorandum of instructions, based on that prepared by Sir Arthur Newsholme.

VILLAGE SETTLEMENTS FOR DISABLED EX-SERVICE MEN.

A SCHEME TO COMBINE RESTORATIVE TREATMENT WITH INDUSTRIAL AND SOCIAL RECONSTRUCTION.

FOR the past year a group of men and women have been engaged in working out a practical scheme of which the main objects are as follows: (1) To restore disabled sailors and soldiers to health of mind and body; (2) to train them for settlement in villages and on the land; (3) as a natural result, to encourage the founding of small self-supplying village communities, where local industries and handicrafts shall be pursued on sound and just lines.

A provisional committee has now been constituted to carry out these aims, the members at present being Sir Robert Armstrong-Jones, Major E. A. Belcher, Lord Henry Cavendish-Bentinck, M.P., Mr. Noel Buxton, M.P., Mr. Warwick Draper, Dr. R. Fortescue Fox (chairman), Lady Grogan, Mr. W. Cecil Harris (honorary treasurer), Prof. W. R. Lethaby, Dr. Egbert C. Morland, Mr. Alfred H. Powell, Mr. Fred Rowntree, Sir George H. Savage, and Mr. Wilfred Trotter. Miss Hilda Fox is the honorary secretary, to whom communications and offers of service may be addressed at 36, Devonshire-place, W. 1.

The following are the guiding principles of the scheme

Healing and restoration after certain types of disablement is a slow and tedious process, demanding patience and tact. The training for a new trade or profession, or for some modification of the old, is also a slow process. It seems, therefore, a matter of common-sense and humanity to carry on the two together, and to provide for each man who needs it a system of curative treatment, combined with manual or mental training, such as will cure his disabilities, develop his natural gifts, and equip him to become, as far as possible, and at the earliest possible date, a self-supporting citizen.

The committee desire that a large number of disabled and delicate men may be trained for rural life and village crafts, believing that in a congenial rural life lies the cure for their physical and mental ills. They must be attracted to the training centre not only by the hope of physical or mental cure, but by the prospect of some degree of home life, self-government, and self-development. The committee discard the idea of military discipline, and propose that the men shall form a committee among themselves to cooperate in the management of the place and help to evolve the necessary rules and regulations. Not only will curative treatment and training be given, but the social and industrial aspects of the settlement will be studied and some system for the fair production and distribution of goods thought out and applied.

The village settlement will serve two purposes. It will be a healing and training centre, from which many hundreds of disabled men will pass every year restored to health and vigour, and ready to contribute to the coming colonisation of the home country or to practise the craft or art for which they will have been newly trained. It should also naturally become the nucleus of something more lasting, for it is proposed that little by little selected men shall settle with their families on the particular estate, there forming the basis of a permanent village settlement, with its own life and industries, institutions, and interests.

Some of the details of the scheme may be given.

Site and size of the Settlement.—From the medical point of view it is essential that all the circumstances and surroundings of the settlement—such as situation and climate—shall favour health. Town areas are therefore undesirable, as also flat or damp country. For the best results surroundings of natural beauty and tranquillity are necessary. If it proves most desirable to settle near an existing town, these features must still be secured. In any case fertility of soil and convenience of transport must be regarded, together with ready opportunity for public service of water, electricity, and the like.

The committee strongly wish, if possible, to begin with an area of one square mile (640 acres), suitable for a training centre of, say, 1000 disabled men at a time, that being an economical medical unit. Of these, perhaps two-thirds will study agriculture and allied subjects, the rest handicrafts and business subjects. A certain proportion as they pass through will become desirous of settling permanently on the land or in villages with their families, and ultimately it is hoped that about 200 ex-Service men may make their homes on the estate.

Types of disablement suitable to the scheme.—The types of case most likely to benefit by such a scheme of combined treatment and training are: (1) A large number of men suffering from shell-shock, neurasthenia, and depression, for whom the encouraging and home-like influences of such a settlement are more suited than institutional treatment; (2) men crippled by wounds or by stiff or wasted joints or muscles; (3) men who have suffered amputation; (4) certain cases recovering from malaria or other fevers, and delicate men for whom a country life is prescribed. Incurable cases—that is to say, men who cannot reasonably be expected to recover any real capacity for work—will not be received, nor those who still require surgical aid or residence in hospitals. The cases to be selected for the settlement will belong to the category of out-patients. Much importance is attached to the mixture of all kinds of curable disability and disablement. The patients will not be arranged in groups according to the form of disability from which they suffer—e.g., (1) mental shock, (2) neurasthenia, (3) paralysis, (4) amputation, (5) wounded limbs, and so on—but will live, work, and be treated together, the more severe with the slighter cases. In this way the intensive effects of gathering together numbers of men suffering from a particular form of abnormality may be avoided. The committee have the support of eminent authority in believing that aggregation of many cases of the same malady may prove as injurious to mental and nervous disorders as in infective illnesses.

Principles of employment.—The three main considerations are: (1) Medical; (2) the man's natural tastes and aptitudes; (3) the likelihood of financial success. Upon arrival a man should go before a committee consisting of experts in (1) orthopædics, neurasthenia, and general medicine, (2) education, (3) technical education, (4) industry and employment, who should give him their best advice upon

lection of an occupation. Each case must be considered on its own merits, so that as far as possible some work ıy be found for every man which will aid his physical cure, ɔth and occupy his mind and bring out his latent talents, d provide a safe investment for the future. The medical ın in charge will take periodical measurements and :ords of the patient's muscular power and movement, igability and general progress.

The present sincere desire for industrial reform, widely l deeply felt, suggests that some experiments in this ection might be tried which would be of value in the ure. The conditions for such experiments are good, as men are not able-bodied, and therefore at first business nciples are not strictly applicable, although economic ndness must be an aim and should be a natural result. 'actories will doubtless remain in certain industries. t there is a growing reaction against the universal ourse to the factory system, with its specialisation labour, speeding-up, and lack of personal relation- ps. There is in many quarters a desire to return to odified form of the old craft guilds, in which a man may 'n to create articles for use of a high standard and himself ome a master craftsman, not wholly spending his life in forming some mechanical and deadening process. The kshops of the proposed settlement must aim at high ditions of work, whereby articles are well and heartily le, and to attain this it seems desirable that the producers ll have some share and interest in the things which they e produced, associated, as far as possible, in self-governing kshops.

lministration.—One of the most important features of the ome is the home life within it. It is believed that many ı, if they could have their wives and children living with n would happily settle down to a prolonged period of ning, extending over months or even years. The sug- ion therefore is that cottages should be provided as es for these families. Any patient during his course ld be free to apply to the committee for the use of a age for himself and his family, and it might well be that privilege of occupying one of these could be dependent ı good work and good conduct, as well as upon suitability. e of the families would only be there for a time; others ld stay permanently and form the nucleus of a new ge. In either case the presence of home life within raining centre would be a strength to it in many ways.

is proposed that compulsory and harassing regulations ld be absent from the Settlement, and that the men lselves should be represented in its administration and tion.

URBAN VITAL STATISTICS.

(Week ended Oct. 27th, 1917.)

lish and Welsh Towns.—In the 96 English and Welsh towns, with gregate civil population estimated at nearly 17,000,000 persons, nual rate of mortality was 12·0, against rates rising from 10·8 to er 1000 in the four preceding weeks. In London, with a popu- exceeding 4,000,000 persons, the death-rate was 13·2, or 0·3 per bove that recorded in the previous week; among the remaining the rates ranged from 4·0 in Dewsbury, 5·5 in Edmonton, and Gillingham and in Ilford to 17·6 in Wakefield, 20·8 in Brighton, ·7 in Stockton-on-Tees. The principal epidemic diseases caused 265 ı, which corresponded to an annual rate of 0·8 per 1000, and included ɔm infantile diarrhœa, 43 from whooping-cough, 42 from diph- , 33 from measles, and 13 each from enteric fever and scarlet fever. eaths from diarrhœa, which had been 278, 243, and 179 in the preceding weeks, further fell to 121, and included 31 in London, 14 rerpool, and 7 each in Hull and Newcastle-on-Tyne. The 1094 ɔf scarlet fever and 1357 of diphtheria under treatment in the politan Asylums Hospitals and the London Fever Hospital were tively 73 and 43 above the numbers remaining at the end of the us week. Of the deaths from all causes in the 96 towns 183 ıd from violence. The causes of 31 deaths were uncertified, of 6 were registered in Birmingham and 2 each in Rochdale, Shields, and Tynemouth, but not one in London.

h Towns.—In the 16 largest Scotch towns, with an aggregate ation estimated at nearly 2,500,000 persons, the annual rate of ity was 11·4, against 11·8 and 12·1 per 1000 in the two preceding

The 231 deaths in Glasgow corresponded to an annual 10·8 per 1000, and included 9 from diphtheria, 6 from infantile ea, 3 from whooping-cough, and 2 each from enteric fever and s. The 83 deaths in Edinburgh were equal to a rate of 13·0 per ad included 2 from diphtheria and 1 each from scarlet fever, ng-cough, and diarrhœa.

Towns.—The 84 deaths in Dublin corresponded to an annual 11·0, or 6·9 per 1000 less than that recorded in the previous week, cluded 6 from infantile diarrhœa, 2 from whooping-cough, and from enteric fever, measles, and diphtheria. The 97 deaths in were equal to a rate of 12·9 per 1000, and included 3 from le diarrhœa, 2 from measles, and 1 each from enteric fever and fever.

YAL ALBERT HOSPITAL, DEVONPORT.—A balance- has just been issued from the Constructive Depart- of H.M. Dockyard, Devonport, which shows, as a of the first year's collections for the Royal Albert tal, Devonport, the sum of £1000 has been raised by icers and employees for the funds of that charity.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: K. L. S. Ward, S. C. Shaw, H. B. Bullen, C. V. Isard, F. N. Reynolds.

ARMY MEDICAL SERVICE.

Temp. Surg.-Gen. Sir G. H. Makins, K.C.M.G., C.B., to rank as Lieutenant-General whilst specially employed.

Lieut.-Col. H. Davy, C.B., R.A.M.C., T.F., to be temporary Colonel.

Lieut.-Col. H. M. Jacques, D.S.O., Canadian A.M.C., to be temporary Colonel whilst employed as Assistant Director of Medical Services, vice Lieut.-Col (temp. Col.) J. F. Fotheringham, C.M.G., Canadian A.M.C.

Major T. A. Lomer, Canadian A.M.C., to be Deputy Assistant Director of Medical Services, vice Temp. Col. H. M. Jacques, D.S.O., Canadian A.M.C.

TERRITORIAL FORCE.

Lieut.-Col. D. L. Hamilton, Field Ambulance, to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Temp. Hon. Capt. P. Macdiarmid to be Temporary Honorary Lieutenant-Colonel.

Major and Bt. Lieut.-Col. T. D. Acland, R.A.M.C. (T.F.), to be temporary Lieutenant-Colonel.

Capt. J. H. Gurley to be acting Lieutenant-Colonel whilst in command of a Convalescent Depôt.

W. H. G. Aspland to be temporary Major.

Temp. Major W. B. Edwards and Major G. Maydon relinquish the acting rank of Lieutenant-Colonel on re-posting.

Temp. Capt. T. F. O'Hagan, C.A.M.C., to be acting Major.

To be acting Majors whilst Chemical Advisers: Temp. Capt. G. H. Clark, R.A.M.C., Temp. Capt. B. J. Collingwood, R.A.M.C., Temp. Capt. C. A. L. Evans, R.A.M.C.

Capt. O. R. McEwen relinquishes the acting rank of Major on re-posting.

Temporary Lieutenants to be temporary Captains: R. C. Muir, G. J. Farie, C. C. Kerby, E. F. R. Alford, T. M. Bellew, W. F. Addey, J. G. Shanklin, A. J. Hutton, H. S. Jones, A. M. Barlow, A. A. Murison, R. C. H. Francis, H. W. Ogle-Skan, J. E. Frere, H. Bowring, C. G. T. Mosse, R. H. Beardsley, R. McAllister, J. G. G. Pigott, W. G. McAfee, H. G. Westropp, J. D. Pearson, H. P. W. Lincoln, J. Whitehead, A. N. Hodges, C. A. Joll, H. Chapple.

To be temporary Captains: W. E. C. Dickson, T. L. Wormald, F. H. Ellis, M.C., late Captain, Rhodesian Regiment, J. L. Digby, W. J. B. Brown, A. C. Freeth.

To be temporary Lieutenants: T. J. D. Quigley, A. H. Saward, T. F. Collins, T. M. Boyd, J. M. Muir, V. J. Cullen, G. R. Harcourt, G. E. J. Greene, S. E. Cathcart, T. A. Clarke, H. H. James, A. G. Ede, I. C. MacKenzie, C. Murray, S. Vosper, L. R. G. de Glanville, H. F. Powell, F. E. Clay, F. W. Maunsell, W. Dalgleish, R. H. G. Bruce, W. B. Dove, J. McCalg, A. S. Webley, C. H. A. Alderton, J. Ramsbottom, E. W. Diggett, W. O. Pitt, J. B. Burt, S. Stockman, R. E. Moyes, H. Walker, V. T. P. Webster, J. J. Smith, A. R. Barlas, M. J. Landy, R. W. Greatorex, J. M. Sheridan, W. T. Thomson, F. J. Cutler, I. Feldman, L. F. Jamieson, E. Clark-Cohen.

E. V. Keller to be temporary honorary Lieutenant.

Officers relinquishing their commissions: Temp. Major W. J. Prendergast. Temp. Capts.: W. V. Coffyn, F. W. W. Griffin (on account of ill-health contracted on active service; granted the honorary rank of Captain), R. M. Beaton (granted the honorary rank of Captain), A. E. Stevens, W. T. Dobson (on account of ill-health contracted on active service), J. MacInnes (on account of ill-health), W. B. Thomson (on account of ill-health), G. J. Wilson (on account of ill-health), F. T. Simpson, M.C., G. de Bec Turtle, D. S. Cooper, C. J. Sparrow (granted the honorary rank of Captain). Temp. Lieuts.: W. S. Wallace J. C. Lee, T. Waterhouse, T. Stang, S. G. Kean, W. C. Brown, C. M. Anderson, J. W. MacKie, F. G. Pedley, M.C., G. L. Gall.

SPECIAL RESERVE OF OFFICERS.

Capt. S. Miller to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

TERRITORIAL FORCE.

Lieut.-Col. D. L. Hamilton to be seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Lieut.-Col. D. L. Hamilton to be restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Capts. G. D. Thomson and D. Macaulay relinquish their commissions on account of ill-health.

J. O. Wilson (Major, late R.A.M.C.) to be temporary Captain and Medical Officer, 2/1st Battalion, County of Aberdeen Volunteer Regiment.

J. M. Lithgow (late Lieutenant, 1st Volunteer Battalion, Leicestershire Regiment) to be temporary Captain and Medical Officer, 2/1st Battalion, Leicestershire Volunteer Regiment.

W. L. Brown to be temporary Captain and Medical Officer, S.W. Group.

R. H. F. Bostock to be temporary Lieutenant and Medical Officer, 2nd Battalion, North Riding Volunteer Regiment.

DEATHS IN THE SERVICES.

Brig.-Surg. Stephen Henry Dickerson, A.M.D. (retired), at his residence, Trevennen House, South Cornwall, on Oct. 22nd, in his eighty-seventh year. He received his first commission in 1854, retiring on half-pay in 1880, when he took up his residence in Cornwall. He interested himself in local benevolent work and was held in the highest esteem by all who knew him.

Correspondence.

"Audi alteram partem."

PROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—At one time I had medical charge of an establishment employing 2000 men—mostly young and away from home. Venereal diseases were very prevalent among them. I gave the usual lectures—with the usual result. I could not prevent immorality. However, my duty, that for which I was employed and paid, concerned rather the health and efficiency of my charges. At length I delivered a lecture, often repeated, which produced results. I explained in simple language the nature of the several venereal diseases, pointing out that the microbes, when accessible, were easily killed by antiseptics, and that immediately after infection they were present, not in the urethra (a closed pipe) or under the surface of the skin, but on the surface itself. I insisted that if the men exposed themselves to infection they must disinfect without delay. My dispensary attendant had orders to give any man who asked for it an ounce of solution of permanganate of potash (1/2000) and a little cotton-wool. The men were instructed to sponge the penis carefully, especially about the frænum and the meatus, the lips of which were to be a little everted, with the cotton-wool wetted with the antiseptic. Any other antiseptic will do equally well. Within a few days I ceased to see fresh cases. Thereafter not one originated in the establishment for more than six months. Then one occurred in a man who had taken no precautions. Then no more. I daresay I had some good fortune, but there can be no doubt that the very simple procedure adopted was extraordinarily successful. After all, it was only such as any surgeon would use did he fear infection of any sort. It was a form of very early treatment.

More elaborate methods are cumbersome and unnecessary. Owing to the delay involved they are less effective. They are not required if disinfection be carried out immediately. For instance, injections into the urethra and calomel cream are quite unnecessary. The latter is a feeble antiseptic and is useful only when, much later, the micro-organisms have penetrated the tissues. I take it, no surgeon would dream of disinfecting his hands with calomel.

I offer no excuse or apology. I was right, and every normal person will think I was right. Indeed, I have never met anyone who thought otherwise. I can be blamed only by foolish fanatics, now I think few in number, who may be ignored. The fear of disease does not prevent immorality. Young men who know much about venereal diseases are on the average much less continent than young girls who know little. I am told, I do not know with what measure of truth, that since the present war began from one-third to one-quarter of the British Army has contracted venereal disease. It is certain, at least, that an enormous proportion of the colonial forces have suffered, and that abroad, at any moment, tens of thousands of men of all ranks are in detention camps. What will happen when the soldiers who have suffered in hospital, but not in the field, return to their homes? Must we expect such another epidemic as that which swept Europe in Tudor times and was then known as the Great Pox in contradistinction to that lesser evil, the small pox? It is surely a bitter reflection that there lay, and lies, at hand in every medical military inspection room the means to prevent all this suffering, loss of efficiency, and future danger to the public.

We must bear in mind the helplessness of all classes under our current laws and the protection afforded by these laws to the criminal. In England at the present day if one person wilfully kills another with arsenic he is hanged by the neck till he is dead. If he tries to poison with arsenic but fails, he is condemned to a long term of penal servitude. But if he wilfully poisons with venereal disease, even to death, the law holds him guiltless provided the poisoning is done in a particularly cruel and treacherous way. Even when the sufferer is a perfectly innocent person (e.g., a wife) the law punishes not for the poisoning but for the infidelity.

I am, Sir, yours faithfully,

Southsea, Oct. 27th, 1917. G. ARCHDALL REID.

SUCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In addressing you last week my purpose was not to mete out praise or blame to anyone, but simply to give things their proper proportions and relations. Your assurance that the object of your leading article was precisely to show that "the foundations of an efficient anti-tuberculosis scheme have been well and truly laid" is especially serviceable at a time when war conditions threaten to leave us between "the devil and the deep." The effects of the war on the incidence of tuberculosis constitute an added reason for urgency, yet in many quarters, contrariwise the war forms the excuse for doing nothing. If the foundations are sure and the seed is growing, for Heaven's sake let us go ahead with the building.

I am, Sir, yours faithfully,

Edinburgh, Oct. 27th, 1917. R. W. PHILIP.

THE WELFARE OF THE BLIND.

To the Editor of THE LANCET.

SIR,—May I draw attention to an error inadvertently made by Mr. Arnold Lawson in his interesting "Notes on the Report of the Departmental Committee" in your issue of Oct. 27th. The same mistake appeared in a notice in the *Times* of Oct. 26th. In referring to the recommendations of the committee concerning workshop accommodation for the blind, Mr. Lawson writes that the committee "calculates that about 3000 such shops, at a cost of £100–£175 each, are needed." The committee's statement (para. 219) reads "Some 3000 additional *places* (my italics) are urgently required, and the estimated cost per place varies from £100–£175" This statement means additional workshop accommodation for that number of individuals, and is based on the committee's conclusions (para. 139) that there are approximately 3000 blind persons employed in workshops at present and rather more than 3000 blind persons capable of training and employment, but receiving neither.

I am, Sir, yours faithfully,

Harley-street, Oct. 29th, 1917. J. B. LAWFORD.

ETHER-OIL ANÆSTHESIA BY THE RECTUM.

To the Editor of THE LANCET.

SIR,—I was much interested in the article by Mr. H. M. Page on this subject in your issue of Oct. 27th. Gwathmey's method has been on trial sufficiently long to enable us to form a fairly accurate judgment of its merits. Probably its especial value lies in its application to cases which present difficulties with the ordinary methods of anæsthesia; prominent amongst these are, as Mr. Page says, cases of hyperthyroidism. Ether-oil per rectum, plus Crile's technique of rehearsals, gives excellent results. If I venture to criticise Mr. Page's article it is chiefly because he has omitted to mention the all-important contra-indication to the use of the method—viz., the existence of any pathological condition of the lower bowel. The danger of causing irritation of the mucous membrane in a normal case is not to be ignored,[1] and the fear of this has led me to use the method as little as possible. I am glad, therefore, to read that Mr. Page finds that 6 ounces of a 2 to 1 solution is safe, and at the same time gives adequate anæsthesia. I hope that this dosage will prove satisfactory in other hands. The whole future of the method depends upon the certainty of freedom from irritation of the lower bowel.

Another criticism that I should like to make is that Mr. Page does not give any warning as to the necessity of keeping a close watch upon the depth of anæsthesia. This may seem unnecessary, but it must be remembered that there is very little control over the anæsthesia; the dosage is not accurately known, and anæsthesia sometimes comes on unusually rapidly and quickly deepens. For this reason I find it advisable to leave the rectal tube *in situ* with a clip on the end. Some of the solution can then be run out if necessary. Fortunately, a much lighter anæsthesia is adequate than with inhalation methods, and the minimum amount of the solution should be injected. In some cases

[1] Surg., Gyn., Obstet., 1917, vol. xxiv., p. 370.

ome of the injection is returned and the anæsthetist is then n the dark as to the depth of anæsthesia to be expected. o prevent this it is a good plan before injection to place a illow under the buttocks, which are then held together for few minutes when injection is complete. If the patient as been anæsthetised in bed he should be moved carefully n to the operating table.

Distension of the intestine may occur (it probably always oes); has Mr. Page found that it interferes with abdominal urgery? I cannot agree with him that ether-oil is a good ethod in oral surgery; one cannot guarantee the presence a vigorous cough reflex, and, if it is present, I do not ink it is welcome to the surgeon. There can be very little ubt that intratracheal insufflation of ether is the best ethod in this branch of military surgery. Small quantities -4 oz.) of a solution of suitable strength of ether-oil may be ed to great advantage as an addition to the preliminary podermic to overcome the difficulties or dangers of induction special cases. But it must not be forgotten that the highly nsitive and fastidious patient may not take kindly to ether-oil r rectum.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

Queen Anne-street, W., Oct. 29th, 1917.

RITISH HOSPITALS' ASSOCIATION AND NCREASED GRANTS FOR TREATMENT OF SOLDIERS.

To the Editor of THE LANCET.

SIR,—A conference was held by the British Hospitals' sociation at Westminster Hospital on Oct. 19th for the sideration of the following subjects—viz.: (1) Increase of nts for treatment of soldiers, and (2) proposed payment discharged soldiers. There was a large and representa- attendance, and after full discussion the following olutions were passed—viz.:

That, having regard to the abnormal advance in prices of provisions all other commodities since the rates of payment for the treatment rounded soldiers in civilian hospitals were fixed, this meeting is nimously of opinion that formal representations should be made to authorities concerned with a view to obtaining an immediate ease in such rates of payment.

That this meeting is of opinion that the scale of charges for the tment of disabled sailors and soldiers in civilian voluntary hospitals, roposed by the Ministry of Pensions (*vide* Schedule 1, "Instruc- s and Notes on the Treatment and Training of Disabled Men") is equate and would only partially meet the cost of such treatment, strongly affirms the view that the scale of charges should be such ould cover the whole cost of the maintenance, including treatment n and remuneration in respect of professional medical services.

That the chairman and council of the British Hospitals' Associa- are hereby requested to consider the foregoing resolutions and such action as may be necessary.

he executive committee have forwarded the resolutions he secretaries and superintendents of hospitals, asking e officers to bring them to the notice of their managing mittees, with a view to their sending to the association, later than Nov. 10th, any comments which they may re to express thereon.

We are, Sir, yours faithfully,

J. COURTNEY BUCHANAN, CONRAD W. THIES, } Honorary Secretaries.

Victoria-street, Westminster, S.W. 1, Oct. 26th, 1917.

COMMITTEE over which Sir George Makins preside has been appointed to inspect the hospitals for ish troops in India and to issue a report regarding them.

ORNWALL COUNTY COUNCIL AND MIDWIVES.—sanitary committee of the Cornwall county council has n £250 to the local county nursing association for the ose of training five nurse-midwives who will work in shes unprovided with midwives. The medical officer of th for the county of Cornwall, Dr. E. M. Clarke, states Cornwall requires 20 additional midwives.

HE LATE MR. WILLIAM ELDER.—William r, L.R.C.P., L.R.C.S., L.M. Edin., died at his residence, am, Bristol, on Oct. 14th, in his seventy-third year. The ased devoted his life to medical missions; he was for ars superintendent of the Madras Medical Mission Dis- aries and Hospital and Medical School. He afterwards appointed superintendent of the Medical Mission at ol, holding the appointment for over 30 years. He was in high respect in Bristol and did a wonderful work ngst the poorer inhabitants of that city.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Major G. M. Hunt, M.C., Australian A.M.C., qualified at Sydney in 1911, and was in practice at Candelo, New South Wales, prior to joining the Australian Expeditionary Force. The award of the M.C. was recorded in THE LANCET of April 21st, 1917, p. 630.
Capt. J. Alston, R.A.M.C.

Died of Wounds.

Capt. F. B. Metcalfe, Australian A.M.C.
Capt. J. R. Tillett, Australian A.M.C.
Capt. J. Davie, Australian A.M.C.

Wounded.

Capt. E. P. Dark, M.C., R.A.M.C.
Lieut. W. B. Douglas-Drummond, R.A.M.C., attached Scots Guards.
Capt. J. A. Liley, M.C., R.A.M.C., attached King's Own Scottish Borderers.
Major W. H. Rennick, Australian A.M.C.
Capt. J. Howard, R.A.M.C.
Capt. H. A. Macmillan, R.A.M.C., attd. Leicester Regiment.
Capt. F. Metcalfe, R.A.M.C.
Capt. F. C. Pridham, R.A.M.C.
Capt. E. A. Lumley, R.A.M.C.
Capt. F. L. Bignell, Australian A.M.C.
Lieut.-Col. C. W. Thompson, Australian A.M.C.
Capt. G. A. Birnie, R.A.M.C., attached East Surrey Regiment.
Capt. T. Duncan, R.A.M.C., attached Royal Scots.
Capt. F. E. Keane, R.A.M.C., attached Argyll and Sutherland Highlanders.
Capt. A. E. Pringle-Paterson, R.A.M.C., attached Royal Scots.
Capt. F. W. Stone, R.A.M.C.
Capt. I. Faris, New Zealand M.C.
Capt. W. A. Todd, R.A.M.C., attached Norfolk Regiment.
Capt. H. F. Wilson, R.A.M.C., attached Durham Light Infantry.
Capt. F. W. Fay, Australian A.M.C.
Major H. L. Welch, D.S.O., Australian A.M.C.
Capt. C. H. Brennan, R.A.M.C.
Capt. J. E. Cable, R.A.M.C., attd. Northumberland Fusiliers.
Capt. W. G. Goudie, R.A.M.C., attached R.F.A.
Capt. H. B. Graham, R.A.M.C.
Capt. R. MacKinnon, R.A.M.C.
Capt. D. H. Russell, M.C., R.A.M.C.
Capt. E. B. Leech, R.A.M.C., attached West Yorks Regt.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. E. T. Gaunt, R.A.M.C., killed in action, second son of Dr. J. P. Gaunt, late of Alvechurch, Worcestershire.
Capt. E. B. C. Burnside, The Buffs, killed in action, only son of Col. E. A. Burnside, A.D.M.S., Ripon.
Capt. D. W. Edwards, M.C., A.S.C., attached Royal Flying Corps, reported missing April 6th, 1917, now reported killed in action, younger son of Capt. D. W. Edwards, R.A.M.C.
Lieut. R. S. M. Inch, M.C., Norfolk Regt., killed in action, son of Dr. R. Inch, of Gorebridge, Midlothian, Scotland.

THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet announced. All are members of the R.A.M.C.

Distinguished Service Order.—Temp. Capt. J. C. Sale, M.C.
Bar to the Military Cross.—Temp. Capt. H. R. MacIntyre, M.C. (The award of the Military Cross was recorded in THE LANCET of August 25th, 1917, p. 332.)
Military Cross.—Temp. Lieut. H. M. L. Crawford, Temp. Capt. L. H. Guest, Temp. Capt. W. L. A. Harrison, Temp. Capt. W. G. Johnston, Temp. Capt. R. Kennon, Temp. Capt. J. Kirton, Temp. Capt. W. J. Pearson.

THE Bronze Medal for Gallantry in Saving Life at Sea has been awarded by the King to Captain E. D. Gairdner, D.S.O., R.A.M.C., in recognition of his services when the transport *Iverna* was torpedoed in the Mediterranean on Jan. 1st last.

OBITUARY OF THE WAR.

JOSEPH CECIL HARRIS, M.R.C.S. ENG., L.D.S.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. C. Harris, who was killed in action on August 16th, was son of the late Joseph Harris, of Bilston, Staffs. He was educated at King Edward's School and Birmingham University, qualifying in dentistry in 1906 and taking the qualifications of the Conjoint Board four years later. He then joined Mr. W. G. Owen in dental practice at Wolverhampton. At the outbreak of war he was mobilised with the North Midland Field Ambulance, to which he was attached, and went to France early in 1915. In action first at Neuve Chapelle, he saw continuous service until he was killed instantly by a bomb which fell on a casualty clearing station. Captain Harris was a good all-round sportsman, playing hockey for Birmingham University and Stafford County. His fellow officers held him in esteem as a gallant comrade.



ROBERT DUNLOP BLACK FREW, M.D. GLASG., D.P.H.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. D. B. Frew, who was recently killed in action, was a graduate of Glasgow University, taking his M.B. in 1908 and his M.D. in 1912, afterwards holding resident appointments at the Glasgow Royal Infirmary, Monsall Infectious Hospital, Manchester, and the Manchester Hospital for Consumption. In 1913 he was appointed tuberculosis officer for the County Borough of Wallasey. Prior to the outbreak of hostilities he had joined the Territorial Force, with which he was mobilised very early in the war.



A medical friend writes of Captain Frew: "Although he had not long been in Wallasey, his even temper and genial manner had made him a host of friends. He was keen on his work, and there can be no doubt that a successful career lay before him. The news of his untimely death was received with sorrow by a wide circle."

JOHN JAMES PERCIVAL CHARLES, M.B., CH. B. EDIN.,

MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. J. P. Charles, who died of wounds on Oct. 6th, was son of the late Professor Charles, M.D., D.Sc., University College, Cork, and of Mrs. Charles, of Audley House, Swanage. He was educated at Cork and Edinburgh, taking his medical degree at Edinburgh University in 1909. He joined the Royal Army Medical Corps in August, 1914, and went to the front, where, after being twice wounded, he was mentioned in despatches and awarded the Military Cross. He was dressing cases on the field under heavy fire on July 31st when a sniper shot him, inflicting a wound from which he died after much suffering nine weeks later. An Army chaplain writes of Captain Charles's disregard for his own safety and his popularity in the battalion.

LESLIE OLDERSHAW, M.B., CH.B. LIVERP.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain L. Oldershaw, who was killed in France on Oct. 2nd, at the age of 24 years, was youngest son of George Oldershaw, M.R.C.S. Eng., of Walton, Liverpool. Educated at the Liverpool Institute and University, he graduated M.B., Ch.B. in 1915, immediately accepting a commission in the Royal Army Medical Corps, and being stationed at the First Western General Hospital, Fazakerley. After service in Gallipoli and Egypt he was transferred to France in the spring of this year, where he remained until his death, which was caused by a piece of shrapnel striking him on the head while he was returning from the firing line. His chief at Fazakerley writes of the excellent work done by Captain Oldershaw when he was attached to the hospital. He was a good horseman and musician. Last April he married Ruby third daughter of Sampson Gannon, of Bootle.



JAMES WILSON PETTINGER, B.A., M.B., B.C. CANTAB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. W. Pettinger, who died on Oct. 6th of illness contracted on active service at the age of 43, was second son of the late Dr. G. W. Pettinger, of Manchester. He was educated at Selwyn College, Cambridge, and St. George's Hospital, London, taking his B.A. degree in 1896 and M.B., B.C. in 1902. After holding appointments as house physician and house surgeon at St. George's Hospital, he settled in private practice in 1903 at Kingsbridge, South Devon, becoming honorary medical officer to the cottage hospital there. In July, 1915, having volunteered for active service with the R. A. M. C., he was shortly appointed to a hospital ship running between the Dardanelles and England. Later he was on the cross-Channel route, when he developed a septic condition of his arm and was under treatment in Netley Hospital for some months, death being finally due to pneumonia.



Captain Pettinger showed great promise of success in his profession and his early death leaves a gap in a wide circle of friends.

JAMES JOACHIM NICHOLAS, M.B., B.S. MELB.

LIEUTENANT-COLONEL, AUSTRALIAN ARMY MEDICAL CORPS.

Lieutenant-Colonel J. J. Nicholas, who was killed in France on Sept. 20th at the age of 27 years, was born in the Riverina district of New South Wales. Graduating M.B., B.S. with honours at Melbourne University in 1911, he became house surgeon to the Melbourne Hospital in 1912 and registrar a year later. He was an enthusiastic member of the Commonwealth Military Forces before the outbreak of war, and early in August, 1914, was gazetted captain to No. 1 Australian Light Horse Field Ambulance. He proceeded overseas with this unit and saw service with them at Anzac. Promoted major in January, 1916, he was transferred to the 3rd Australian Field Ambulance, in

whom he saw service in France. In December of the same year he was appointed D.A.D.M.S. to the 1st Australian Division. Shortly before his death he was promoted to the rank of lieutenant-colonel, and was then the youngest ambulance commander in the A.I.F. He was making an inspection of a dressing station when he was struck by a shell and killed instantly.

Colonel Nicholas was a man of strong personality. His chief writes of him: "Throughout his life he showed keenness, initiative, and enthusiasm, and was well liked by the men who served under him, as well as by his brother officers. His death was deeply regretted by all who knew him."

Medical Benefits of Invalided Sailors and Soldiers.

The Panel Committee for the County of London has had under consideration the provisional regulations relating to medical benefits of invalided seamen, marines, and soldiers, and decided on Oct. 9th (1) to approach the Insurance Commissioners in order to obtain the immediate withdrawal of these regulations; (2) to advise panel practitioners to notify the London Insurance Committee of their unwillingness to accept discharged and invalided sailors and soldiers on their lists under the terms of the new regulations, but that they are prepared to agree to the reinstatement of discharged invalided sailors and soldiers on their lists in accordance with the arrangement which has hitherto prevailed, and to render them medical treatment at the present capitation rate pending negotiations for a more equitable scheme; and (3) to draw the attention of the staff of the principal London hospitals to the arrangements being made for the domiciliary treatment of discharged disabled soldiers by general practitioners, asking them to urge upon the governors of the hospitals the necessity of restricting the services rendered to these patients to those of a specialist or consultative character, and of dealing only with such cases as are at the same time under the control of a general practitioner.

Ministry of National Service: its Medical Organisation.

The New Gradations.—An Army Council Instruction has now been issued to the press confirming the medical classification of recruits into four groups for military purposes, which we sketched out in THE LANCET of Oct. 20th (p. 626) and which came into force on Thursday last. The official description of the categories is as follows:—

Category A is for men fit for general service, and includes: (i.) Men fully fit for general service in any theatre of war in all respects, i.e. as regards training, physical and mental qualifications. Recruits who should be fit for A (i.) as soon as trained. Men who have previously served with an Expeditionary Force, who should be fit for A (i.) as soon as "hardened." (iv.) Men under 19 years of age who should be fit for A (i.) or A (ii.) as soon as they are 19 years of age.

Category B is for men not fit for general service, but fit for service at home (and abroad in the case of men passed fit for service overseas), and includes those: (i.) In field units (at home only) and in Garrison Companies, or on duties of an analogous nature. (ii.) In Labour Companies, or on garrison or regimental outdoor employment. (iii.) On sedentary work as clerks, storemen, batmen, cooks, orderlies, on sedentary duties, &c., or, if skilled tradesmen, at their trades.

Category D is for men temporarily unfit for service in categories A or B, but likely to become fit within six months, and meanwhile either:—(i.) In Command Depôts. (ii.) In Regimental Depôts. (iii.) In any unit under or awaiting medical or dental treatment (who on completion of treatment will rejoin their own original category).

Category E is for men unfit for service in categories A or B and not likely to become fit within six months.

Category D is stated to be temporary, so far as reserve units are concerned, and a man in a higher category will automatically come under (i.), if under medical or dental treatment, rejoining his original category until transferred either upwards or downwards, by the medical officer or travelling medical board.

Medical Boards.—We announced on Oct. 20th that medical men wishing to serve on the medical boards are invited to offer their services to their Local Medical War Committee, or, if living in the London postal district, direct to the Central Medical War Committee. In some cases where such application has been made the reply has been received that the list has been already completed and forwarded to the Ministry of National Service. We understand, however, that applications made direct to the Chief Commissioner of Medical Services will still be considered.

Treatment of Patients suffering from Nervous Disorders.

The group of advisers who have conferred with the Director-General of the Army Medical Service on the treatment of patients suffering from nervous disorders have arrived, as far as the non-official members of the conference are concerned, at a unanimous basis for discussion. Among the suggestions made are that centres for the treatment of national nervous disorders should be established in different parts of the country as hospitals of not more than 500 or less than 250 beds, with ample grounds and facilities for employment and re-education. The medical staff, it is proposed, should consist of a commanding officer with special knowledge, assisted by a non-medical adjutant and a junior medical staff in proportion of at least 1 officer to 50 patients. A specialist staff should be available for consultation, and all patients suffering from nervous disorders should be sent direct from the Expeditionary Force to one of these hospitals or should be transferred from general hospitals as soon as their condition permits, without the intervention of any auxiliary hospital or convalescent home. We hope that these admirable proposals will in the event receive confirmation.

THE FRENCH RED CROSS AND FRANCE'S DAY.—The Lord Mayor of London, as honorary treasurer of the British Empire Fund for French wounded, has given to M. Paul Cambon, the French Ambassador, a cheque for £166,500, the amount realised by the collection on France's Day, and Lady Gertrude Cochrane, on behalf of the Scottish Red Cross, has handed over a cheque for £10,000 as a donation to the French Red Cross.

"OUR DAY."—The Joint Committee of the British Red Cross Society have received an additional sum of £23,000 from Victoria as an "Our Day" gift, making a total of £178,000. More than £5000 has also been received from Mauritius, £1800 from Uganda, and £1500 from Bermuda.

POSTHUMOUS AWARD OF THE V.C. TO A BRISTOL MEDICAL STUDENT.—Second Lieutenant H. F. Parsons, who succumbed to wounds received, was posthumously awarded the V.C. for most conspicuous bravery during a night attack by a strong party of the enemy on a bombing party held by his command. He was the eldest son of the Rev. Ash Parsons, a Wesleyan minister, of Bristol, and at the commencement of the war was studying medicine at Bristol University, with a view to become a medical missionary.

PENSION revision boards still continue to exceed their rights by questioning pensioners on the amount of their earnings when examining them for re-assessment. An Army Council Instruction just issued states again that any such inquiry is contrary to the present policy. In no case are men to be questioned as to the amount of their earnings.

COLLEGE OF PHYSICIANS OF PHILADELPHIA: THE ALVARENGA PRIZE.—The next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14th, 1918, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the college, Mr. Francis R. Packard, 19, South Twenty-second-street, Philadelphia, Pa., U.S.A., on or before May 1st, 1918. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1917 has been awarded to Dr. Wilburt C. Davison, Baltimore, for an essay entitled: "The Superiority of Inoculations with Mixed Triple Vaccine (*B. typhosus*, *B. paratyphosus A*, and *B. paratyphosus B*) over Successive Inoculations with the Single Vaccines, as shown by Agglutinin Curves in Men and Rabbits."

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates passed recently the First and Second Examinations for the Diploma in Public Health:—

Annie Rankine McKail, Ella Ferrier Pringle, and John Lewis Owen.

The following passed the First Examination:—

Maud Muriel Gavin and Gokal Chand Sahgal.

The following passed the Second Examination:—

Report on Premises: Maud Muriel Gavin. Examination at Fever Hospital: Maud Muriel Gavin, Gokal Chand Sahgal, Gladys Richarda May Violet Williamson, and Tha Doe. Epidemiology and Endemiology: Maud Muriel Gavin.

The following are the results of the Triple Qualification Examinations:—

FIRST EXAMINATION.

Rachel Caplan.

Physics.—**William Richard Tattersall and Robert James Hayes Spence.**

Biology.—**Esias Andries Nortje.**

SECOND EXAMINATION.

Ronald Gillan Clouston, Robert Charles Dow, and William Campbell.

Physiology.—**Anup Singh Narula. James MacClashan, Gracie Olwen Davies Evans, Thomas Poole, John Stevenson, William Dunsmore Oswald, and John Patrick Tynam Mills.**

THIRD EXAMINATION.

James Charles Meek, Lawson Lamb Steele, Patabendi Martin Fernando, Lizzie Robertson Clark, Mayberry Hugh Carleton, Reginald Leslie Wright, and Jacob Johannes van Niekerk.

Materia Medica.—**Walter Granville Carew, Andrew Gold, Ben Chiefitz, Leo Hugo Peries, John Murray, and Jatindra Kumar Sen.**

FINAL EXAMINATION.

Robert Pollok, Archibald Bissember, Hendrik Wildeboer, Jackson Baird Minford, Frederic Gerald Pailthorpe, George Nicol Groves, Cuthbert Caulter Magee, Agnes Emilie Keen, Harold Gengoult Smith, Bernard Malachy Lynam, Roberto Quesada-Jimenez, Iwan Davies, Len Philip Sumarasinha, Cecil Vale Samwell, Phœbe Foott, Reginald Douglas Howat, Donald McKenzie Black, George Patrick de Silva, and Clifford Durham Pullan.

Medicine.—**John Lavens West and Arukatti Patabendigo Frederick Abeysuriya.**

Surgery.—**Alfred Parker and William George Wilson.**

Midwifery.—**Samuel Amery Faulkner, Indranarayan Borrah, Alfred Edward Sanderson, Arukatti Patabendigo Frederick Abeysuriya, Christopher Robert Cecil Moon, Allan Paul McLeod, and Alfred Parker.**

Medical Jurisprudence.—**Hugh William Howatson, Lizzie Robertson Clark, Thomas Hall James Douglas, Don Alfred Walpola, Charles Edward Stuart Runciman, John Boyd, and Christopher Robert Cecil Moon.**

HUNTERIAN SOCIETY.—Sir Alfred Pearce Gould will deliver the Hunterian lecture of this society in the form of an opening to a discussion on Modern Antiseptics, at the Royal Society of Medicine, on Wednesday next, Nov. 7th, at 5 P.M. On Thursday, Dec. 6th, at the same hour, a discussion will take place on the medical classification of recruits, opened by Captain Haldin Davis, R.A.M.C.

ROYAL INSTITUTION OF GREAT BRITAIN.—A general monthly meeting of the members will be held at the Royal Institution, Albemarle-street, Piccadilly, W., on Monday, Nov. 5th, at 5 P.M.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent Dental Examinations Donald Skinner and Robert Mitchell du Preez passed the First Dental Examination, and Willem Nieuwstadt-Retief, James Gould, and James Rowan Sherrard passed the Final Examination and were granted the diploma L.D.S. R.C.S. Edin.

THE INSTITUTIONAL TREATMENT OF TUBERCULOSIS IN THE COUNTY OF LONDON.—The London Insurance Committee has had under consideration the following facts: The waiting list for the institutional treatment of tuberculosis is now just over 500; the number of beds available, all fully occupied, is 459; and the number of applications annually is approximately 2500, of which some 2000 are new cases. Only a certain sum is available annually for sanatorium benefit. The fund at the disposal of the committee for institutional treatment is that remaining after other expenses in the administration of sanatorium benefit have been met, and the question arises how best to make use of the limited funds available. Dr. Noel D. Bardswell, to whom as adviser to the committee the question was submitted, writes as follows:—

On principle, it may be stated that a long waiting list defeats the object of the committee in that early and curable cases not infrequently develop into cases of advanced disease while waiting for a bed. At present the period of waiting is about 10 weeks for men and 7-8 weeks for women. It is a matter of shortage of beds. At King Edward VII. Sanatorium I had to deal with this same problem of insufficient accommodation. There I made it my principle to regulate the waiting list so that the admission of patients could be gained within five weeks after acceptance. This plan long experience proved to be satisfactory to all concerned. At Midhurst, with an accommodation of 105 beds, I aimed at a waiting list of 20, and never allowed it to exceed 35. To secure this, the standard for eligibility for admission and the duration of residence had to be somewhat varied from time to time in accordance with the pressure upon the beds, in short, upon the number of applications for admission. The Insurance Committee have 459 beds. To admit patients within some four weeks of acceptance, the waiting list should be some 80. To maintain the waiting list at a workable figure, one of two courses is open: (*a*) to select from all cases recommended for institutional treatment those most likely to make a permanent recovery and to give them preference in the shape of several months' residence, the remaining patients receiving domiciliary or dispensary treatment; or (*b*) to give every one recommended institutional treatment who, in my opinion, is likely to benefit from it to the point of restoration in some degree of capacity for work, a minimum of four weeks' residence, the period to be extended if it be deemed desirable and possible. This principle was adopted with much success at Brighton by Sir A. Newsholme, now principal medical officer of the Local Government Board, and was followed by myself at Midhurst. It is the course that I recommend. It ensures that every patient who is capable of improvement has the opportunity of learning the principle of the treatment he should follow. Moreover, as a means of safeguarding from infection those associated with the patients at home or at work, a course of education in a sanatorium, even if limited to only a few weeks, is of inestimable value.

In accordance with this opinion the London Insurance Committee decided to recommend for a minimum of four weeks' institutional treatment every insured person suffering from tuberculosis and likely to benefit by such treatment to the point of restoration of some degree of working ability.

Dr. H. S. Souttar has been granted the Royal authority to wear the Insignia of Officer of the Order of the Crown conferred upon him by the King of the Belgians.

LONGEVITY.—Mrs. Parrington, who is living at Chichester, widow of Canon Matthew Parrington, has just celebrated the 100th anniversary of her birthday.

MEDICAL MAGISTRATE.—Mr. Thomas Arthur King, M.R.C.S., L.R.C.P., of Bude, has been placed on the commission of the peace for the county of Cornwall.

AT the last meeting of the Exeter city council the Mayor expressed the gratitude of the council to Dr. Charles James Vlieland for his valuable services in connexion with the infant welfare centres in Exeter.

MEDICAL MAYOR.—Dr. William Fookes Thompson, J.P., will hold the office of Mayor of Launceston for a second year.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

War Services of the Medical Profession.

IN moving his motion of thanks in the House of Commons to the Navy, Army, and Mercantile Marine, Mr. LLOYD GEORGE, the Prime Minister, made reference to the war services of the medical profession. The portion of the motion on which he made this allusion was as follows:—

That the thanks of this House be given to the officers, non-commissioned officers, and men of the British Armies in the field, and also to the women in the medical and other services auxiliary thereto, for their unfailing courage and endurance in defending the right, amid sufferings and hardships unparalleled in the history of war, and for their loyal readiness to continue the work to which they have set their hands until the liberty of the world is secure.

Mr. LLOYD GEORGE said: I should like to say one word about the medical service, and I do not think we ought to pass by the chaplains in the Army. They have sustained their losses and done their work manfully, courageously, and tenderly. When you come to the medical service—men and women—they have never shown greater courage, knowledge, and experience. Thousands of them have devoted themselves to the curing of the wounded and the healing of the sick, and great consultants have given up princely incomes and volunteered for this service. Wounds have been cured which before the war were regarded as fatal, and as an illustration, and only as one illustration, of the services they have rendered in saving life not merely by their curing expedients, but by the precautions they have taken, I may mention that in the South African War I believe 50,000 men died of typhoid. In France, out of our gigantic Army, during the whole three years of the war only 3,000 have fallen victims to that disease. We owe thanks to the medical profession. They have suffered. Hundreds have been killed and many hundreds more wounded. We should also thank the women, our trained and untrained nurses, whose tenderness and care for the wounded have earned thanks from the lips of hundreds of thousands of poor men whose lives have been

saved and who have been spared much suffering through their tender ministration. They have not escaped perils. Many have been killed by shell-fire. Many of them have been drowned in hospital ships, sunk with the sign of the Cross upon them. We all owe them a debt of gratitude.

Earl CURZON, in proposing an identical motion of thanks in the House of Lords, also alluded to the medical services. He said that when war broke out the Royal Army Medical Corps had 3168 officers and 16,330 other ranks. There were at the present time nearly 14,000 officers and 125,000 other ranks. The health of the Army had been better than that of the civilian population at home. He also mentioned the work of the nurses, not only in the hospitals behind the line, but also in the casualty clearing stations only just behind the front. Seven had been drowned by submarine action and several others had been killed by enemy bombs in hospitals. The name of one had been rendered immortal by her martyrdom.

War Pensions Committees.

The Naval and Military War Pensions (Local Committees) Bill has been read a second time in the House of Commons.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 24TH.

Medical Examinations for the Army.

Mr. JACOBSEN asked the representative of the Ministry of National Service whether a man passed into the Army under the old conditions who produced a certificate of subsequent date from a civilian doctor to the effect that he was medically unfit for the work assigned to him could claim to be re-examined by an independent medical board.—Mr. BECK wrote in reply: With regard to men passed for the Army but remaining in reserve—that is, not called up—arrangements are being made that any such man will be graded, if he so wishes, by a National Service medical board, and if dissatisfied he may apply to be examined by the Local Government Board medical assessors attached to an appeal tribunal. My honourable friend will realise that serving soldiers are in no way under the control of the Ministry of National Service, but I can assure him that the Army Council is doing everything in its power to prevent soldiers being employed on work for which they are physically unsuited.

Hospital Uniform of Soldiers.

Mr. FERENS asked the Under Secretary for War whether he was aware that the uniform given to invalid and convalescent soldiers was obnoxious to them; and would he take steps to enable these men to wear their own uniform with a band on their arm, as did officers in similar circumstances.—Mr. MACPHERSON answered: The retention of regulation hospital clothing is necessary for administrative and disciplinary reasons, and patients in hospital cannot be allowed to wear ordinary uniform. Improvements have recently been introduced in the cut and style of these garments.

THURSDAY, OCT. 25TH.

Medical Referees for Disabled Soldiers.

Mr. C. ROBERTS asked the Pensions Minister what arrangements had been made for the appointment of medical referees under Article 12 of the instructions and notes on the treatment and training of disabled men.—Mr. PRATT (who replied) wrote: In response to advertisements inserted in the medical press and otherwise circulated a number of applications for the post of medical referee have now been received from all parts of the country and a committee of selection, consisting of representatives of the Central Medical War Committee, the Local Government Board, and the Insurance Commission, are considering the qualifications of candidates. The committee have already made recommendations to cover all the southern and some of the south midland counties of England and the whole of Wales, and over 100 medical referees out of a probable total of about 400 have been appointed.

Prison Dietary.

Replying to Mr. E. HARVEY on the subject of the prison dietary scale, Sir G. CAVE (the Home Secretary) said: The prison diets in force during 1915–16 were prescribed in 1901 in pursuance of the recommendations of a Committee who considered the whole subject of diet, with a view to avoiding indulgence and excess. But at the present time the current views on the subject have had to be considerably revised for all classes of the community and the prison population cannot be exempt from the consequences of this revision. The medical officers of the prisons are responsible for seeing that no prisoner's health suffers from any restriction of diet consequent on a general shortage of food. They have full powers to supplement the ordinary diet for any prisoner whose physical condition may require it, and they use their powers freely where necessary. Close observation maintained in all prisons since the beginning of the war last does not point to any need for increasing the dietary.

TUESDAY, OCT. 30TH.

Medical Students.

Mr. SNOWDEN asked the Under Secretary for War whether it was intended to withdraw from the Army all medical students serving in non-combatant posts in order to relieve the shortage of doctors at home.—Mr. MACPHERSON answered: The whole question of the conditions of military service as they affect medical students is under consideration by the Ministry of National Service. I am informed that representations on the subject will shortly be laid by the Minister before the Army Council.

General Hospitals of Territorial Force.

Colonel GRETTON asked the Under Secretary of State for War whether in the regulations for general hospitals of the Territorial Force it was laid down that for each 520 beds there should be, in addition to medical officers engaged in administrative duties, four lieutenant-colonels and eight majors selected from distinguished members of the medical profession; and would he give a detailed Return showing how many beds there were at the present time in each of the five London general hospitals and how many lieutenant-colonels and majors selected from distinguished members of the civilian medical profession were actually engaged at the present time in clinical duties in each of the hospitals.—Mr. MACPHERSON answered: The reply to the first part of the question is in the affirmative, but only half of these members are to be on duty at one time, and the employment of the mobilised staff is subject to such modifications as the G.O.C. of the command may think necessary. The number of equipped beds in each of the general hospitals referred to and the number of lieutenant-colonels and majors doing duty at present is as follows:—

	Beds.	Lieut.-Cols. and Bt.-Lt.-Colonels.		Majors and Bt.-Majors.	
1st London	1021	.....	4	.....	4
2nd London	1512	.....	2	.....	5
3rd London	2400	.....	2	.....	5
4th London	2171	.....	2	.....	3
5th London	662	.....	1	.....	1

The numbers of medical officers and civilian medical practitioners employed in addition to those stated above is as follows: 1st London, 21; 2nd London, 21; 3rd London, 36; 4th London, 31; 5th London, 16.

Ministry of Health.

Sir W. COLLINS asked the Prime Minister whether, in view of the conflicting and varied interests involved and the number of Government departments concerned, he would consider the advisability of setting up some form of inquiry, by Royal Commission or otherwise, into the desirability and practicability of instituting a Ministry of Health.—Mr. BONAR LAW (Chancellor of the Exchequer) replied: There is reason to hope that substantial agreement will shortly be reached amongst those directly concerned, and as the subject has already been very carefully investigated and reported on by the Reconstruction Committee and by a committee of Ministers, the Government do not consider that the appointment of a Royal Commission is necessary.

Soldiers Suffering from Nerve-strain.

In answer to Mr. KING, Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) said: Men who are invalided from either the Navy or Army suffering from nerve-strain are medically examined by a special expert board. Any representations of local committees or available opinions of medical practitioners are considered carefully when men come up for re-examination.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, London.
The Making of Women: Oxford Essays in Feminism. By A. Maude Royden and Others. Edited by Victor Gollancz. 4*s.* 6*d.* net.
The Camp School. By Margaret McMillan. C.B.E. 3*s.* 6*d.* net.
The Framework of a Lasting Peace. Edited by Leonard S. Woolf. 4*s.* 6*d.* net.

CHAPMAN AND HALL, London, and JOHN WILEY AND SONS, New York.
A German-English Dictionary for Chemists. By Austin M. Patterson, M.D. 9*s.* 6*d.* net.

HEADLEY BROS., Kingsway House, Kingsway, W.C.
Practical Cheesemaking. By C. W. Walker-Tisdale and Walter H. Woodnutt. 4*s.* 6*d.* net.

MASSON ET CIE, Paris.
Leishmanioses: Kala-Azar, Bouton d'Orient, Leishmaniose Américaine. Par A. Laveran, Professeur a l'Institut Pasteur, Membre de l'Institut et de l'Académie de Médecine. Fr.15.

METHUEN AND CO., London.
What Every Masseuse Should Know: Comfortable Grasps for Joint Movements. By Vera Waddington. With Prefatory Notes by Sir Rickman J. Godlee, K.C.V.O., and Mrs. Annie E. Stewart, and an Introduction by Laura M. Fairbairn. 2*s.* 6*d.* net.

W. B. SAUNDERS COMPANY, London and Philadelphia.
A Text-book of General Bacteriology. By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Fifth edition, thoroughly revised. 15s. net.
Diseases of the Stomach, Intestines, and Pancreas. By Robert Coleman Kemp, M.D., Professor of Gastro-Intestinal Diseases at the Fordham University Medical School. Third edition, revised and enlarged. Cloth, 30s. net.
Diseases of the Genito-Urinary Organs and the Kidneys. By Robert H. Greene, M.D., Professor of Genito Urinary Surgery at the Fordham University, New York; and Harlow Brooks, M.D., Professor of Clinical Medicine, University and Bellevue Hospital Medical College. Fourth edition, thoroughly revised. Cloth, 24s. net.
Diseases of the Chest and the Principles of Physical Diagnosis. By George W. Norris, M.D., Assistant Professor of Medicine in the University of Pennsylvania; and Henry R. M. Landis, M.D., Assistant Professor of Medicine in the University of Pennsylvania; with a chapter on the Electrocardiograph in Heart Disease by Edward B. Krumbharr, Ph.D., M.D., Assistant Professor of Research Medicine in the University of Pennsylvania. Cloth, 30s. net.
A Manual of Pharmacology and its Application to Therapeutics and Toxicology. By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve, University of Cleveland. 20s net.
A Treatise on Diseases of the Skin: For the Use of Advanced Students and Practitioners. By Henry Stelwagon, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Eighth edition, thoroughly revised. Cloth, 28s. net.
Handbook of Practical Treatment. By Many Writers. Edited by J. H. Musser, jun., B.S., M.D., and T. C. Kelly, A.M., M.D. Vol. IV. 30s. net.
Treatment of Emergencies. By H. R. Owen, M.D. 8s. 6d. net.

SCIENTIFIC PRESS, London.
Human Temperaments. By C. Mercier, M.D., F.R.C.P. Second and revised edition. 1s. 3d. net.

SECRETARY OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION, Hot Springs, Virginia, U.S.A.
Transactions of the Association for 1916. Vol. XXXII.

YEAR BOOK PUBLISHERS, Chicago.
Practical Medicine Series. Vol. IV. Gynecology. Edited by E. C. Dudley, A.M., M.D., and S. S. Schochet, M.D. Series 1917. $1.35.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BALL, EDWIN, L.R.C.P., M.R.C.S., has been appointed Medical Officer for the No. 2 District by the Bristol Board of Guardians.

LOWE, J. P., M.B., Ch.B. Vict., one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 9, and to be attached more particularly to the Macclesfield and Congleton and Sandbach County Courts.

ST. THOMAS'S HOSPITAL.—To be Casualty Officers and Resident Anæsthetists: ISARD, C. V., M.R.C.S., L.R.C.P. Lond; MARRINER, H. I.; MCCANN, J. G., M.R.C.S., L.R.C.P. Lond.; ODLING, F. C., M.R.C.S., L.R.C.P. Lond. To be Resident House Physicians: CLARK, W. E. LE GROS, M.R.C.S., L.R.C.P. Lond.; ELOFF, J. S., M.R.C.S., L.R.C.P. Lond.; GIBB, E. A., M.R.C.S., L.R.C.P. Lond.; RUSSELL, H. B., M.R.C.S., L.R.C.P. Lond. To be Resident House Surgeons: CALVO, R.; DILWORTH, T. F. M., M.B., B.Ch., B.A.O. N.U.I.; HILMY, A. H., M.R.C.S., L.R.C.P. Lond.; HIEF, F. R. G. To be House Surgeon: WALKER, R. A. To be Resident Obstetric House Physician: REYNOLDS, F. N., M.R.C.S., L.R.C.P. Lond.

SAWDON, GEORGE, M.B., Ch.B. Manch., Honorary Assistant Medical Officer to the Devonshire Hospital, Buxton.

STEWARD, SYDNEY T., M.B., Ch.B. Birm., Assistant Medical Officer to the New Cross Infirmary, Wolverhampton.

THEOBALDS, FLORENCE, M.D. Edin., Honorary Assistant Medical Officer and Honorary Anæsthetist to the Devonshire Hospital, Buxton.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road.—House Surgeon.

BOLTON INFIRMARY AND DISPENSARY.—**Female Senior House Surgeon.** Salary £300 per annum, with board, &c.

BOOTLE BOROUGH HOSPITAL, Derby-road, near Liverpool.—**Junior House Surgeon.** Salary £170 per annum, with board, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £140 per annum, with board, &c.

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CHESTER ROYAL INFIRMARY.—Assistant House Surgeon. Salary £150 per annum, with board, &c.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Resident Medical Officer. Salary £150 per annum, with board, &c.

EVELINA HOSPITAL FOR CHILDREN, Southwark, London, S.E.—House Physician and House Surgeon for four months. Salary at rate of £160 per annum, with board, &c.

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GREAT NORTHERN CENTRAL HOSPITAL, Holloway, London, N.—Two House Surgeons for six months. Salary at rate of £100 per annum, with board, &c.

HACKNEY UNION INFIRMARY, 230, High-street, Homerton, E.—Junior Assistant Medical Officer. Salary £250 per annum, with rations, &c.

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KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, S.W.—Resident Medical Officer. Salary £250 per annum.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Temporary House Governor and Secretary. Salary £250 per annum.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon. Salary £125 per annum, with board, &c.

MANCHESTER, ANCOATS HOSPITAL.—Resident. Salary £50 per annum with board, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Female Resident Medical Officer, unmarried. Salary at rate of £200 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Fairfield-place, Cheetham Hill-road.—House Surgeon. Salary £150 per annum, with board, &c.

MANCHESTER ROYAL INFIRMARY.—Resident Surgical Officer, £225 per annum; Assistant Resident Surgical Officer; Accident Room House Surgeon; and Resident Medical Officer, Central Branch, £200 per annum each.

NOTTINGHAM GENERAL HOSPITAL.—Female Casualty House Surgeon for six months. Salary at rate of £250 per annum, with board, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Resident Medical Officer. Salary at rate of £160 per annum, with board, &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

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ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL), City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £50 per annum, with board, &c.

SURREY COUNTY COUNCIL.—Medical Officers for Mother and Infant Welfare and School Work. Salary £400 per annum.

WORCESTERSHIRE ASYLUM, Barnsley Hall, Bromsgrove.—Temporary Assistant Medical Officer.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Bangor, Down.

Births, Marriages, and Deaths.

BIRTHS.

CROMBIE.—On Oct. 26th, at Highden, Sidcup, the wife of W. Maurice Crombie, M.B., Indian Medical Service, of a son.

MACALPINE.—On Oct. 23rd, at Cranbrook, Sedgley Park, Prestwich, to Captain Jas. B. Macalpine, F.R.C.S., R.A.M.C. (T.), and Mrs. Macalpine, a daughter.

RENSHAW.—On Oct. 21st, at Newstead, Ashton-on-Mersey, to Dr. and Mrs. J. A. Knowles Renshaw—a son.

MARRIAGES.

BEKEN—MAY.—On Oct. 22nd, at Notre Dame de Lorette Park, Lieutenant Kenneth Stewart Beken, R.A.M.C. (T.), to Mary Theresa, daughter of Mr. and Mrs. Robert May, of North Dulwich.

MARSHALL—WILSON.—On Oct. 20th, at St. Margaret's Westminster, Captain J. D. Marshall, D.S.O., R.A.M.C., of Beverley, Chorley New-road, Bolton, to Dorothy, younger daughter of the late William Wilson and Mrs. Wilson, Lyndhurst, Sandford-road, Dublin.

ORR—LINDSAY.—On Oct. 18th, at Buchlyvie Parish Church, Thomas Orr, M.D., D.Sc., Barrister-at-Law, to Dorothy, only daughter of Dr. and Mrs. R. W. Lindsay, Edzell, Buchlyvie, Stirlingshire.

POWELL—BINNEY.—On Oct. 3rd, at St. Paul's, Knightsbridge, Hubert Wybrants Powell, Captain, R.A.M.C., to Laleah Almon, second daughter of the Rev. J. E. H. Binney, of 3, Rue Eugene Manuel, Paris.

ROCHE LYNCH—PINNOCK.—On Oct. 27th, at St. Mary's Church, South Hayling, Temporary Surgeon, R.N., Gerald Roche Lynch, M.B., B.S. Lond., to Sybil Marguerite, third daughter of Mr. and Mrs. Pinnock, of S. Patricks Hayling Island.

SUNDELL—BOLWELL.—On Oct. 27th, at S. John the Evangelist, Lower Weston, by the Vicar, Rev. J. C. Church, B.A., Charles E. Sundell, M.D., M.R.C.P., Temporary Captain, R.A.M.C., to Gwladys, daughter of Mr. and Mrs. A. R. Bolwell, of Forfar Lodge, Bath.

TAYLOR—CAPEL.—On Oct. 24th, at Chipstable Parish Church, Somerset, James Taylor, Captain, R.A.M.C., to Amy Catherine, elder daughter of Mr. and Mrs. Arthur Capel, Bulland Lodge, Wiveliscombe.

DEATHS.

BROOKHOUSE.—On Oct. 19th, at Hill Crest, Lincoln, Charles Smith Brookhouse, L.D.S.

FENTON.—On Oct. 16th, at "Langstone," Ealing, Frederick E. Fenton, F.R.C.S. Ed., M.R.C.P. Ed., V.D., aged 64.

GAUNT.—On Oct. 9th, killed in action, Captain Eric Thomas Gaunt, R.A.M.C., second son of Dr. J. Penn Gaunt, late of Alvechurch, Worcestershire.

ODHAMS.—On Oct. 26th, at St. Giles's Plain, Norwich, George Frederick Odhams, M.D., J.P., aged 56.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE COMMUNAL KITCHEN.

HERE ought to be communal kitchens everywhere; their use would, of course, be at the discretion of the locality. Their instalment not only counts for a very material economy in fuel, but they reduce the hardships of the poorer amongst us, and where the system has been introduced the results have been admirable and greatly appreciated. The establishment of cooking centres for the coming winter would tide over a very trying season for a great body of hard and willing workers. Cafés and restaurants are practically barred to the majority of these, the charges made are beyond their means, and at a time when the energy and efficiency of the human machine are asked more than ever the supply of good nourishing food is essential. As it is two or three sandwiches are trusted to carry over the fatigued machine until the end of the day, whereas a communal kitchen would provide a means of cooking a substantial meal and give accommodation to partake of food under cheerful and comfortable surroundings. In some cases the communal kitchen may not have been organised on lines essential to success, but everything points to the scheme being a sound one, and when properly executed there is little question of the relief and comfort which such institutions will bring to many. Our local authorities have been so hard pressed with fresh duties occasioned by the war that here and there very little time has been given to the communal kitchen, but with the winter upon us we understand that the work is being vitalised. It is generally agreed that in regard to food supplies and other necessaries we should be prepared for still harder times, and one important step would be to keep a healthy activity the communal kitchen, since it has proved to be a real help and blessing to many people. It can be run without financial loss, and the economy of fuel effected is, of course, an important matter, while the heavy expense of burning coal at home would be relieved. The communal kitchen, in fact, furnishes an excellent example of the benefits which a simple scheme of centralisation can render the public.

"ON TOUR."

[A theatrical company arrived in a Scottish provincial town the other Monday to fulfil a week's engagement. On Tuesday night, during the performance, one of the actors, a somewhat deformed and emaciated little man, had a violent hæmorrhage from the lungs. He was taken home to his meagre lodgings, and on the following morning the doctor told the manager of the troupe that the poor fellow's "number was up," and that it was "only a question of time."]

Slightly deformed, he filled a sort of gap,
Serving the chief buffoon as foil and butt,
And drollish were the capers that he cut,
And wry his features when he "took the nap";
He carried on, through good and evil hap,
Till Tuesday last, when, resting "on the side,"
He coughed a bit, and lo! the arterial tide,
Crimson and warm, incarnadined his lap.

I saw him in his little room to-night,
Saw the dew'd temples and the sunken cheek,
And I *knew* the shadow of death was stealing on. . .
He told me he had fixed it up all right
To join the troupe at Wigan, Monday week,
Or Monday fortnight *sure* at Warrington.

JOHN FERGUSON.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. D. M. S. Watson: The Structure, Evolution, and Origin of the Amphibia. Part I., The "Orders" Rachitomi and Stereospondyli (communicated by Prof. J. P. Hill).—Mr. E. C. Grey: The Enzymes concerned in the Decomposition of Glucose and Mannitol by Bacillus Coli Communis. Part II., Experiments of Short Duration with an Emulsion of the Organisms. Part III., Various Phases in the Decomposition of Glucose by an Emulsion of the Organisms (communicated by Dr. A. Harden).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 6th.

OLOGY (Hon. Secretaries—Gordon W. Goodhart, J. A. Murray): P.M.

gural Address:

e President, Prof. W. Bulloch, M.D., F.R.S: The Abbé Spallanzani as an Experimental Pathologist.

RÖNTGEN SOCIETY, at the Royal Society of Arts.

TUESDAY.—8.15 P.M., Presidential Address:—Capt. G. W. C. Kaye: The Part played by X Rays in the War.—Exhibition of Apparatus—Radiological and Electro-therapeutical—illustrating the most recent developments in such appliances.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

THURSDAY.—5 P.M., Bradshaw Lecture:—Prof. E. S. Reynolds: The Causes of Disease.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First-Aid and Ambulance Students:—

MONDAY.—5 P.M., Mr. S. G. Shattock: Inflammation and Gunshot Injuries.

THURSDAY.—5 P.M., Bradshaw Lecture:—Sir John Bland-Sutton: Misplaced and Missing Organs.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Sebaceous Dermatitis.

METEOROLOGICAL READINGS.

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office, Oct. 31st, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 25	...	81	53	39	42	45	Fine
,, 26	...	72	52	44	44	46	Overcast
,, 27	...	72	47	37	37	38	Fine
,, 28	...	70	49	34	34	35	Fine
,, 29	...	63	50	34	38	40	Fine
,, 30	0·19	70	54	39	48	49	Raining
,, 31	0·05	74	55	40	42	42	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Journal of Anatomy, Eugenics Review, St. Paul Medical Journal, Surgery, Gynecology, and Obstetrics, American Journal of Public Health, Albany Medical Annals, Archives de Médecine et de Pharmacie Militaires, Revista del Circulo Médico de Córdoba, Archives de Médecine et Pharmacie Navales, Indian Medical Gazette, Indian Journal of Medical Research, &c.

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IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

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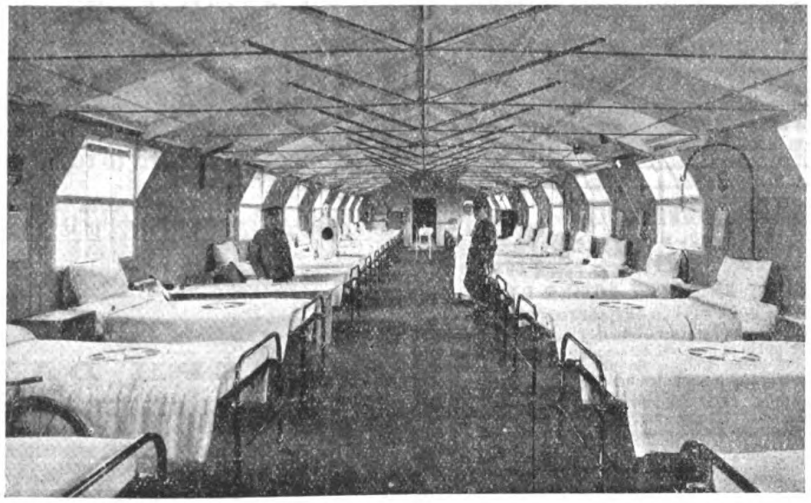
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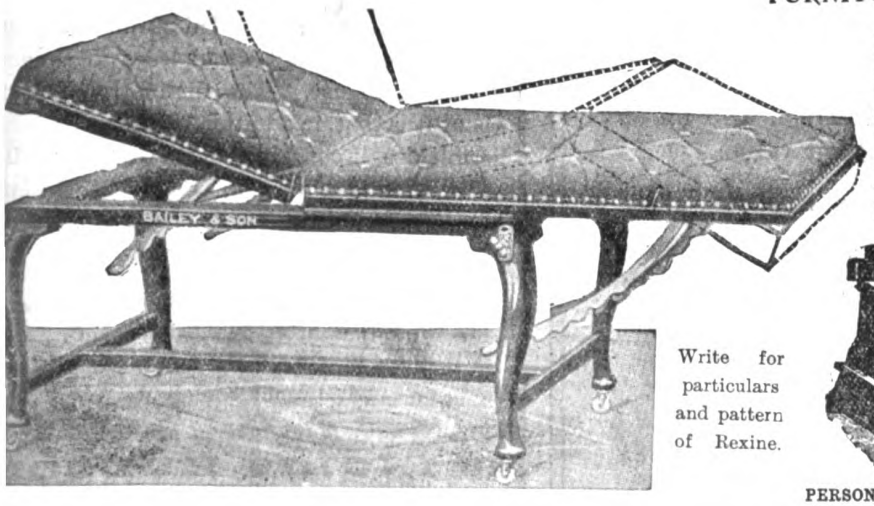
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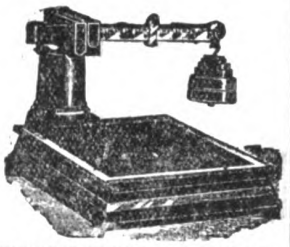
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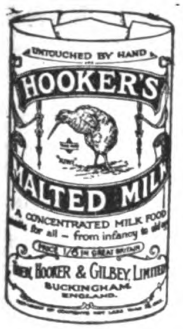
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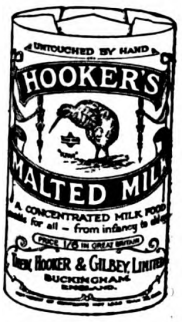
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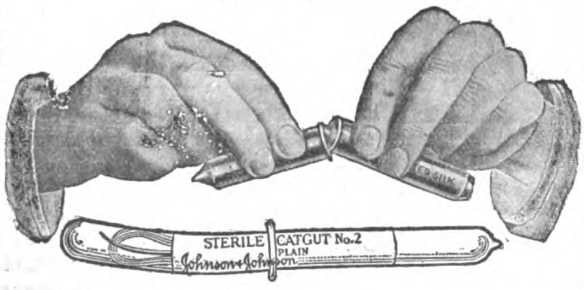


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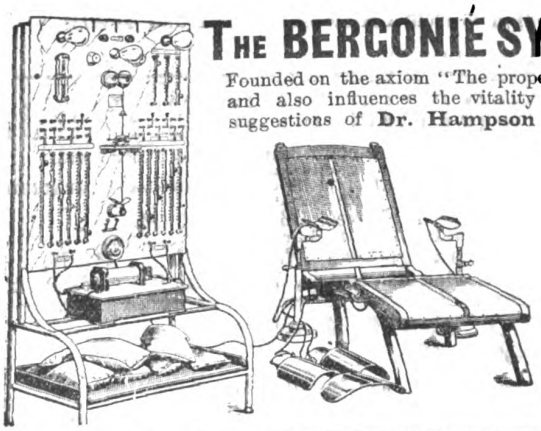
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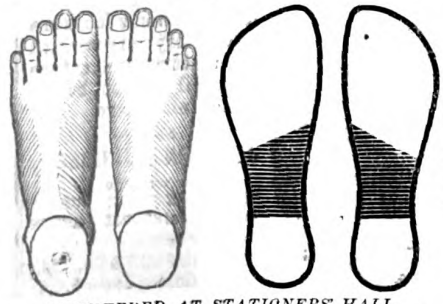
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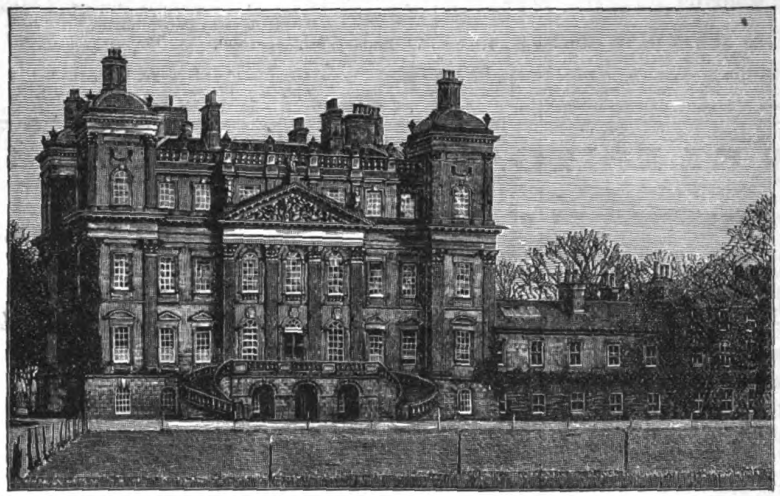
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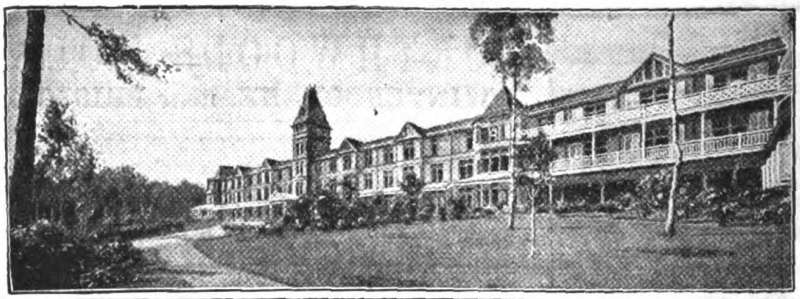
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Exclusively for private Patients of the Upper and Middle Classes. This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 307.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

ASHWOOD HOUSE

KINGSWINFORD,

STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

SPRINGFIELD HOUSE

Near BEDFORD.

(Telephone No. 17.)

A PRIVATE HOME for Mental Cases, established in 1837, surrounded by extensive grounds, reconstructed and modernised.

Terms from 3 guineas per week

(including Separate Bedrooms for all Suitable Cases).

For forms of admission, &c., apply to DAVID BOWER, M.D., as above, or at 5, Duchess-st., Portland-pl., W., on Tuesdays from 4 to 5.

Resident Patients.—Descriptive I (Illustrated) of Medical Men in all parts willing to r Resident Patients sent without charge. Or selection will be ma statement of nature of case and terms to the General Manager, Scho Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square,

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Es (400 feet above sea-level). A HOME for a few LA Mentally Afflicted. Large grounds. Liverpool-street half an Stations: Brentwood one mile; Shenfield one mile. Volu Boarders received. Vacancy.—For terms, &c., apply Dr. H Telephone and Telegrams: Haynes, Brentwood 45.

Haslemere, Surrey.—The Haslem Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, cure, General Nursing. Especially suited to Neurasthenia or to r after illness or operation. Gravel soil.—Apply, Misses Rattray & H "Courtsfold," Haslemere, Surrey. Telephone: 22 Haslemere.

EPILEPSY.

The David Lewis Colony has acc modation for Epileptic Patients of Good Social Positio Gentlemen and Ladies in special houses at the Colony—for B **COLTHURST HOUSE SCHOOL.**

Terms for Ladies and Gentlemen from 30s. a week. Boys at th of 30s. a week.

For further information apply to the Resident Medical Superinten David Lewis Colony, near Alderley Edge, Cheshire.

PORTSMOUTH CORPORATION MENTAL HOSPI

Provision for PRIVATE PATIENTS has just provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

BISHOPSTONE HOUSE, BEDFORI

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received. Terms from 4½ gns. weekly.

Apply, Medical Officer, or Mrs Peele

BETHEL HOSPITAL FOR MENTAL DISEASES

Established 1713.] **Norwich.** ['Phone: 330 No

An endowed Hospital for the reception of PRIVATE PATIE both sexes. Voluntary Boarders admitted without certificates. from 35s per week. Full particulars on application to the M SUPERINTENDENT.

NORTHUMBERLAND HOUS

GREEN LANES,

FINSBURY PARK, N.

A PRIVATE HOME for the Treatment of Ladies and Gent suffering from Mental and Nervous Affections. Highly situated, Finsbury Park.

Voluntary Boarders received without certificates.

For particulars apply to the Resident Physician.

Telephone No. 888 North. Telegrams: "SUBSIDIARY, LOND

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BRUNTON HOUSE, LANCASTE

There are now a few vacancies in this well-appointed private lishment. It is easily accessible from Lancaster, overlooks More Bay, and possesses extensive gardens and grounds, with tenn croquet lawns. Varied scholastic and manual instruction. Indi attention is given to pupils by experienced staff under a Residen sician and Lady Matron. Terms on application to Dr. W. H. Cou

TO MEMBERS OF THE MEDICAL PROFESSION.

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MASSAGE, REMEDIAL EXERCISES, VIBRATION, HIGH FREQUENCY, SCHNEE FOUR CELL BATHS, NAUHEIM and AACHEN TREATMEN

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Telephone No.: MAYFAIR 1,24. Tel. Ad.: "SHAKMANITE, LO

5

Free Eye Hospital, Southampton.—

Wanted, HOUSE SURGEON (Male or Female). Must have some knowledge of Eye work. Salary £100 a year, with board, lodging, and laundry. State when disengaged. Apply to H. T. KEMP, Secretary (pro tem.).

The Manchester Northern Hospital

for WOMEN and CHILDREN, Park-place, Cheetham Hill-road.—The Committee of Management require the services of a duly qualified HOUSE SURGEON, to commence duties on December 1st. Salary, with apartments and board, £150 per annum.

Applications, with testimonials, and stating age and experience, to be sent to Mr. HUBERT TEAGUE, Secretary, 38, Barton Arcade, Manchester, not later than November 3rd.

Bridgwater Hospital.—Wanted, a

HOUSE SURGEON (Male or Female), if male ineligible for Army, fully qualified and registered. Salary £140 per annum, with board, lodging, and washing.

Duties to commence about November 10th.

Applications, with copies of not more than three testimonials, should be sent to the Honorary Secretary immediately.

Bank Chambers, Bridgwater. EDWARD TREVOR, Hon. Sec.

Nottingham General Hospital.—

Wanted, a CASUALTY HOUSE SURGEON (Medical Woman). She will be appointed for six months. Duties to commence on the 1st of December, 1917. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 8th of November. By order.

H. M. KEELY, Secretary.

Salisbury General Infirmary (200

beds).—Wanted, a HOUSE SURGEON, Male or Female. Salary £150 per annum, with apartments, board, lodging, and washing.

Candidates must be fully qualified and registered, and must be ineligible for Military Service.

All applications, with testimonials, to be sent to the undersigned, of whom the rules relative to the duties may be had on application.

The duties may commence from the date of the appointment.

Dated 17th Sept., 1917. S. B. SMITH, Secretary.

Manchester Children's Hospital,

Pendlebury, near Manchester (183 beds).

Wanted, a RESIDENT MEDICAL OFFICER (Lady), who will be appointed for six or twelve months from 1st February. Candidates must be unmarried, doubly qualified, and duly registered.

Salary at the rate of £200 per annum, including war bonus. Applications, stating age and accompanied by copies of testimonials, to be sent to the undersigned at the Hospital, Pendlebury, near Manchester, at once. By order.

Oct. 26th, 1917. W. M. HUMPHRY.

Royal London Ophthalmic Hospital

(MOORFIELDS EYE HOSPITAL), City-road, E.C. 1. Founded 1804.—Applications are invited from Women, or Men who are ineligible for Military Service, for the office of THIRD HOUSE SURGEON.

Applicants must be registered medical practitioners; they should state age and qualifications, and they should be prepared to begin the duties on 1st December, 1917.

Salary at the rate of £50 a year, with War Bonus after four months' service at the rate of 50 per cent. of the salary for that period. Board, residence, and laundry provided.

The appointment is for a period of not less than four months.

19th October, 1917. ROBERT J. BLAND, Secretary-Superintendent.

Bristol Royal Infirmary.—Applica-

tions are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Manchester Royal Infirmary.—The

Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointments:—

RESIDENT SURGICAL OFFICER, £225.
ASSISTANT RESIDENT SURGICAL OFFICER, £200.
ACCIDENT ROOM HOUSE SURGEON, £200.
RESIDENT MEDICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

Each appointment is subject to the provisions of the by-laws as to notice of resignation.

Candidates must state age and send twelve copies of their application and testimonials to the undersigned on or before 9 A.M. on Wednesday, the 14th November, 1917. By order.

FRANK G. HAZELL, General Superintendent and Secretary.

23rd October, 1917.

West Kent General Hospital, Maid-

stone.—Wanted, from November 21st, ASSISTANT HOUSE SURGEON. Salary £125, with board and lodging. Need not be fully qualified. Apply, with details, to Secretary.

Bootle Borough Hospital, Derby-

road, near Liverpool.—JUNIOR HOUSE SURGEON wanted. Salary £170 per annum, with residence, board, and lodging. Beds averaging 100. Ophthalmic, Gynæcological Departments, &c.; also X-Ray Apparatus. Apply Secretary immediately.

Royal Hospital for Diseases of the

CHEST, 231, City-road, E.C. 1.—Qualified CLINICAL ASSISTANTS required in the Out-patients' Department on Tuesdays and Fridays at 2 P.M. No fees. Application to be addressed to the Secretary of the Hospital.

Rotherham Hospital.—Wanted,

JUNIOR HOUSE SURGEON, Male, qualified. Salary £150, with board, lodging, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

Ancoats Hospital, Manchester.—An

Unqualified RESIDENT required, Male. Fourth or Fifth Year Students only need apply. Salary £50 per annum, with board, lodging, and washing.

Apply to the undersigned, from whom all particulars may be obtained.

HERBERT J. DAFFORNE, Secretary.

Paddington Green Children's Hospital,

London, W. 2.—The post of RESIDENT MEDICAL OFFICER will be vacant on 1st December. Salary at the rate of £160 a year, with board, residence, and washing. Applications, with copy testimonials, to be sent to the Secretary by or on 17th November.

By order. W. H. PEARCE, Secretary.

The Warneford General Hospital,

Leamington Spa.—The Committee require the services of a Temporary HOUSE GOVERNOR and SECRETARY (ineligible).

Previous experience preferred. Salary £250.

Applications, giving full particulars, with copies of three recent testimonials, marked "House Governorship," to be sent on or before Wednesday, November 7th, addressed to the Chairman of Committee, Warneford Hospital.

Borough of Hampstead.—The

Council require the services of a fully qualified and registered Practitioner to act (under the Medical Officer of Health) as Temporary MEDICAL OFFICER of the Ante-Natal Clinic. Applicants must have had experience in Maternity work, and are required to advise expectant mothers and perform other duties appertaining to the office. Salary £105. Applications, in writing, stating age and experience, to be sent in by 12th November. By order.

ARTHUR P. JOHNSON, Town Clerk.

Town Hall, Hampstead, N.W. 3, 1st November, 1917.

Surrey County Council.—Appoint-

ment of MEDICAL OFFICERS for Mother and Infant Welfare and School Work.—Applications are invited from Doctors (Men or Women) prepared to devote their whole time to this work, which will include attendance at consultation centres, inspection of school children, and attendance at school clinics.

Salary £400 a year, rising by annual increments of £25 to £425, and actual travelling expenses.

Applications for part-time employment will also be considered.

Applications, stating age, qualifications, and experience, with copies of three recent testimonials, to be sent by Wednesday, November 14th, 1917, to the County Medical Officer of Health, 13, Penrhyn-road, Kingston-upon-Thames.

Glamorgan County Council.—

MEDICAL INSPECTION OF CHILDREN IN PUBLIC ELEMENTARY SCHOOLS.—The Glamorgan County Council invites applications for the appointment of a Temporary (Woman) MEDICAL OFFICER for the purposes of the Council's duties as Local Education Authority in the Inspection of Children in, and Medical Supervision of, the Public Elementary Schools, in pursuance of the Education (Administrative Provisions) Act, 1907.

The salary will be at the rate of £300 per annum, with travelling expenses.

The person appointed will be required to give her whole time to the duties under the control and supervision of the School Medical Officer, and to reside where directed by the Committee.

Preference will be given to candidates who have (a) had an adequate training in State Medicine or hold a Diploma in Public Health, (b) had some definite experience of school hygiene, (c) enjoyed special opportunities for the study of disease in children, and (d) who are able to undertake refraction work.

A knowledge of Welsh is desirable.

Applications for the appointment, stating age and qualifications, and accompanied by copies of not more than three recent testimonials, should be addressed to the School Medical Officer, Dr. D. J. MORGAN, County Hall, Cardiff, and should be received by him not later than the first post on the morning of the 5th November.

Canvassing, personal or otherwise, will be a disqualification.

T. MANSEL FRANKLEN, Clerk of the County Council.

Glamorgan County Hall, Cardiff, 25th October, 1917.

Birkenhead and Wirral Children's HOSPITAL, Woodchurch-road, Birkenhead.—There is a vacancy for a HOUSE SURGEON (Male or Female), duly qualified and registered, at the above Hospital. Honorarium by arrangement. Applications, with testimonials (copies), to be sent to F. W. ARCHER, 14, Cook-street, Liverpool.

Worcestershire Asylum, Barnsley Hall, Bromsgrove.—Wanted, for the duration of the war, a Temporary ASSISTANT MEDICAL OFFICER in order to release a medical man for Military Service. Applicants must be registered Medical Practitioners. Forms of application may be obtained from the Medical Superintendent.

Kensington and Fulham General HOSPITAL, Earl's Court, S.W.5. — Qualified RESIDENT MEDICAL OFFICER required for above Institution. Good opportunity for a man preparing for further qualification. Would suit discharged Service man. Salary £250 a year. Applications, with copies of testimonials, to be sent to the Secretary at the Hospital.

Chester Royal Infirmary (240 beds, 140 Military). — ASSISTANT HOUSE SURGEON wanted. Must be doubly qualified and registered. Salary £150 per annum, with board, apartments, and washing. Applications will be considered from fifth-year students at a lower salary.

Applications, stating age, with copies of testimonials, to be sent to the Hon. Secretary.

East London Hospital for Children, Shadwell, E. 1.—Applications are invited for the post of RESIDENT MEDICAL OFFICER. Applicants must be duly qualified Practitioners in Medicine and Surgery. Salary £150 per annum, with board, residence, and laundry. Applications, with testimonials, must reach the undersigned not later than Saturday, 10th November, 1917.

W. M. WILCOX, Secretary.

Bolton Infirmary and Dispensary (166 beds, mostly Surgical, including Wounded Soldiers).—Applications for the appointment of a SENIOR HOUSE SURGEON are invited from Ladies having a registered Medical and Surgical qualification. Salary £300 per annum, with apartments, board, and attendance.

Applications, stating age, with copy of testimonials, should be forwarded to the undersigned, from whom further particulars may be obtained.

A. E. BRISCOE, Secretary.

Great Northern Central Hospital, Holloway, London, N.7.—Applications are invited for Two HOUSE SURGEONS. Male candidates must be ineligible for Military Service. The appointments are for six months from the 1st December and 1st January respectively. Salary at the rate of £100 per annum, with board, residence, and laundry.

Applications, accompanied by copies of testimonials, should be sent to the undersigned as soon as possible, from whom forms of application and further particulars may be obtained.

29th October, 1917. GILBERT G. PANTER, Secretary.

Evelina Hospital for Children, South-wark, London, S.E.—The Committee of Management require a HOUSE PHYSICIAN and a HOUSE SURGEON for four months from 12th November.

Salary at rate of £160 per annum, with board, residence, and washing. Candidates (either sex) should send applications before 8th November, with three testimonials (copies only), to the Secretary at the Hospital.

Applicants (qualified and registered) must be interviewed by the Medical Committee. Selected candidates have to appear before the Committee of Management. Time and place of meeting will be notified by the undersigned, from whom rules and other particulars relating to the post *must* be obtained.

By order of the Committee of Management.

30th October, 1917. H. C. STANILAND SMITH, Secretary.

Hackney Union Infirmary.—Junior ASSISTANT MEDICAL OFFICER.—The Guardians invite applications from doubly qualified registered Medical Practitioners (either sex) for appointment of Junior Assistant Medical Officer at the above Infirmary, 230, High-street, Homerton, E. 9.

The Infirmary, which contains about 900 beds, is divided into Medical, Surgical, and Maternity Wards, and facilities are provided for Pathological and Bacteriological work. Besides the Medical Superintendent there are Four Resident Assistants and Two Dispensers.

The salary, which is £250 per annum, is inclusive, and rations and furnished apartments with attendance are provided.

The officer appointed will be required to render assistance at the other Establishments and Departments within the Union, to assist in the training and instruction of the Nurses, and to devote his or her whole time to the service of the Guardians.

The officer appointed must also be prepared to conform to the rules, orders, and regulations of the Local Government Board and the Guardians.

The appointment will be determinable at any time upon one month's notice, and will be subject to reconsideration on the termination of the war, to the approval of the Local Government Board, and to the provisions of the Poor Law Officers' Superannuation Act, 1896.

Canvassing the Guardians, either personally or otherwise, is strictly prohibited, and will disqualify a candidate. Applications, upon forms to be obtained from the Medical Superintendent, Hackney Union Infirmary, 230, High-street, Homerton, E. 9, must be delivered to him at once.

By order.

FRANK R. COLES, Clerk to the Guardians.

Clerk's Office, Hackney Union, Homerton, E. 9.

Royal Albert Edward Infirmary, Wigan.—The Board of Management of the above Infirmary invite applications for the whole-time position of SECRETARY, at a salary of £250 per annum.

Particulars of duties may be obtained from the Chairman of the Board. Applications, stating age and qualifications (accompanied by not more than three recent testimonials), must be sent to the Chairman on or before the 13th November, 1917. Canvassing is prohibited.

London Lock Hospital and Rescue HOME.—WARD SISTER required. Fully trained. Salary commencing at £40, with indoor uniform. Preference will be given to a Christian woman. Applications, with full particulars, to the Secretary, 283, Harrow-road, W.9.

Hertfordshire County Council.— TUBERCULOSIS HOSPITAL. — MATRON.—The Hertfordshire County Council invite applications for the post of Matron of the County Tuberculosis Hospital at Ware, Herts.

Candidates must possess a three years' certificate and have had experience in Hospital management. Experience in the management of Tuberculosis cases is also desirable.

Salary £60 per annum, rising by annual increments of £5 to £80 per annum, together with an allowance of £5 per annum for uniform.

Board and lodging will be provided free.

Applications, stating age, experience, qualifications, &c., accompanied by copies of three recent testimonials, to be sent to the undersigned not later than Wednesday, 14th November, 1917.

CHARLES E. LONGMORE,
Clerk of the Hertfordshire County Council.

Clerk of the Peace Office, Hertford, Herts, 29th October, 1917.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

Locum Tenens Provided

at ONE Hour's Notice.

APPLY

ARNOLD & SONS

(J. E. ARNOLD, E. R. ARNOLD),

Surgical Instrument Manufacturers,

TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C.1.

Telegrams: "Instruments, London." Telephone: 5240 City.

Wanted urgently, Resident Doctor for Patient with slight Neurasthenia.—Apply, by letter, to No. 528, THE LANCET Office, 423, Strand, W.C. 2.

Surgeon, ineligible, 18 months' war work, wishes APPOINTMENT, preferably Ophthalmic work.—Address, No. 524, THE LANCET Office, 423, Strand, W.C. 2.

Experienced Doctor with Continental qualification wants ASSISTANT or HOUSE SURGEON post in Hospital or in Private Practice.—Address, No. 527, THE LANCET Office, 423, Strand, W.C. 2.

Day Duty wanted anywhere by middle-aged Medical Man, lately disposed of Practice. No midwifery accepted. Live and board out. Terms 4 guineas and fare.—Medical, 44, Burnbury-road, S.W. 12.

Lady Dispenser (Apoth. Hall), Trained Nurse, experienced, seeks post with Doctor, in or near Portsmouth preferred.—Address, No. 523, THE LANCET Office, 423, Strand, W.C. 2.

Lady Dispenser, Pharmaceutical qualification, Gold Medallist, thorough and methodical worker, seeks Appointment with Doctor or Institution. Country convenient to London preferred. Eight years' experience.—Hanna, 6, Alma Terrace, Calne, Wilts.

Partner wanted in a good-class very old-established General Country Practice in West County. Income over £1800 a year. Poor Law, panel, and other appointments. Mainly agricultural and rising district. Plenty of scope for increase. Good educational facilities. An excellent opportunity for a young and energetic man (ineligible).—Further particulars, apply No. 6193, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Required at once, Cash and Panel PRACTICE in or near London. Principal now free to negotiate. —Send full details in confidence to Arnold & Sons, Transfer Dept., 6 Giltspur-street, London, E.C.1 (opposite St. Bartholomew's Hospital).

Wanted to Purchase, a good Cash and Panel PRACTICE in N.W. or W. London (preferably Ealing or near neighbourhood). Income about £800 upwards. Convenient house. Purchaser free to negotiate immediately.—Apply, Dr. J. Field Hall, 12, Craven street, Strand, W.C. 2.

Wanted, by M.D., a small Practice, paying premium out of takings, or a Partnership on same terms. Age fifty; healthy; good references; ineligible; abstainer; married.—Address, J., care of Mrs. G. Hickson, Towcester, Northamptonshire.

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with thirty-six years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are Sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

Australia. — £400 per annum guaranteed.—An opportunity occurs for a Medical Man to settle down in General Practice in a growing district. Excellent climate. No premium. — Apply personally, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

City Practice for disposal, offering great scope by more attendance. At present about £200 a year, excluding a small panel. Rent moderate. —Apply to 6209, care of Mr. Percival Turner, 4, Adam-street, Strand, London, W.C. 2.

Medical Practice, Country district, West of Scotland. Cash receipts about £1000. Good introduction. Moderate premium. — R. Fleming, S.S.C., 21, Hill-street, Edinburgh.

North Wales Coast.—Over £400 a year, formerly larger. Residential locality on rail. Fees 2s 6d. to 21s. Good house; rent £40. Easily worked. Hunting, fishing, &c. Premium about one year's purchase.—Apply, No. 6195, care of Mr. Percival Turner, 4, Adam street, Strand, W.C. 2.

Bucks.—A Cash and Panel Practice, situated in an industrial district, and producing over £1000 per annum. Panel value £340, and an appointment £240 per annum. Fees 2s. to 5s Excellent house. Premium one year's purchase or near reasonable offer.—Quote Folio 763, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Country Practice.—£500 a year, great scope, near good Town in Lincolnshire. Panel £200. Large house and garden. Fruit-growing district. Vendor retiring. Price only £275. —Apply, No. 6171, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

Sussex.—A General Practice, situated in a Country Town, and producing about £1000 per annum. Small panel. Fees 2s. 6d. upwards. Excellent house, with large gardens, &c.; rent £75 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 764, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Over £800 a year.—Hospital Town, within 100 miles.—Panel nearly 1000. Good corner house in Residential district. Fees from 2s. 6d. upwards. Great scope. Partnership introduction long as desired. Personally visited and investigated. Premium about £700.—Apply, No. 6183, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Kensington. — An old-established Non-dispensing and Non-panel PRACTICE, situated in a good district, and producing about £1400 per annum. Fees 5s. to 21s. Midwifery 10 to 25 guineas. Excellent house, situated in a good position and containing six bedrooms, &c.; rent £120 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 1068, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

To Purchasers.—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Thirty-six years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C.2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

London, West-End. — Good class and old-established PRACTICE for Sale. Nice house, rent £120. Receipts about £1350. Fees 5s. up. No panel. Price £2200.—Manchester Medical and Scholastic Association, 8, King-street.

West of England.—£1000 a year.— Unopposed for many miles. Station close. Ill-health necessitates sale. Good residential district. Appointments nearly £200, and panel of 650 at 9s. Large house and garden; rent £55. All kinds of sport. Very little night work.—Apply, No. 6205, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Berks.—An old-established General PRACTICE, situated in a good country district, and producing about £650 per annum. Panel list 470. Fees 2s. 6d. to 12s. 6d. Excellent house, containing four bedrooms, &c. Very large garden. Rent £35 per annum. Premium three-quarters of a year's purchase.—Quote Folio 989, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

£1000 a year.— Very Urgent.— Within an hour of London. Town of 40,000. No panel. Parish, &c., over £200 a year. Fees 2s. to 3s. 6d. Midwifery none under £3 3s. Small house, with garden; rent £40. Illness cause of sale. Price about one year's purchase, part by instalments.—Apply No. 6201, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

For Disposal, Practices or Partner- SHIPS.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

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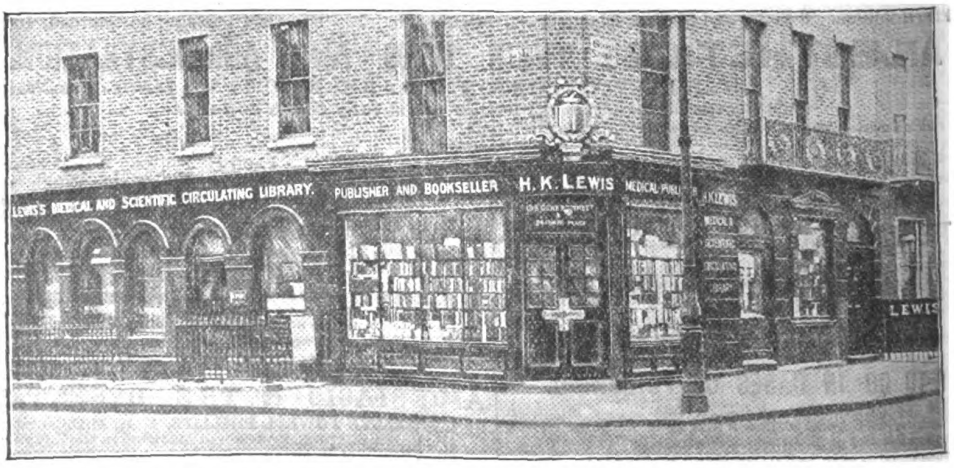
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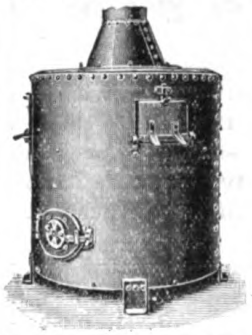
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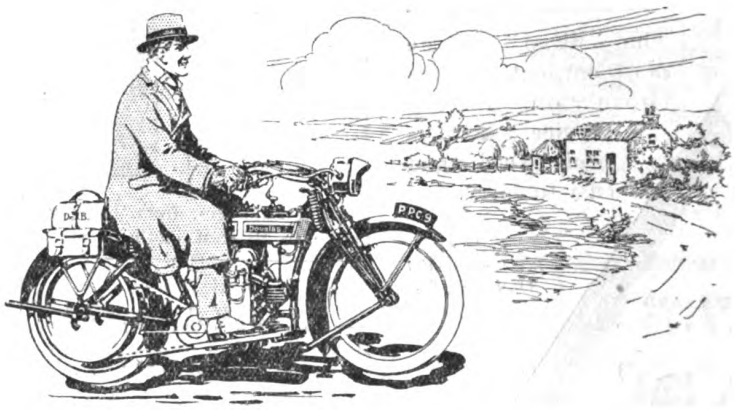
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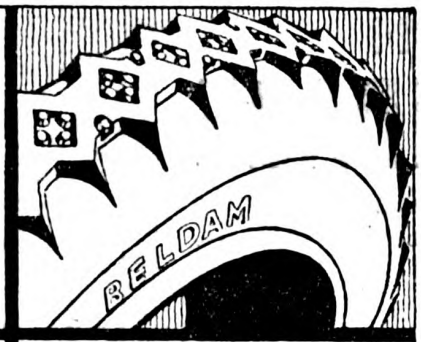
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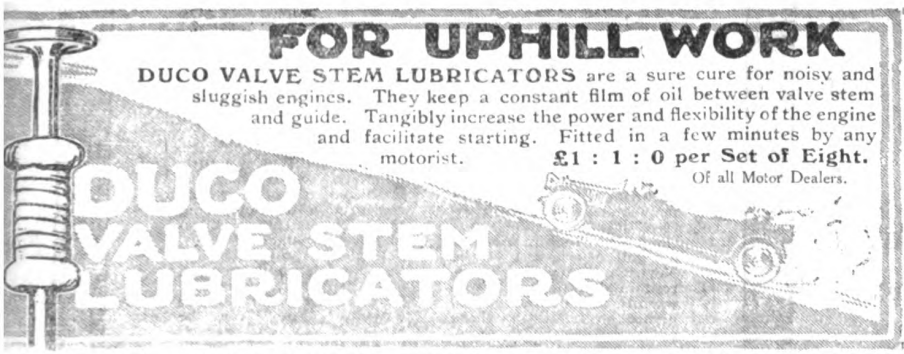
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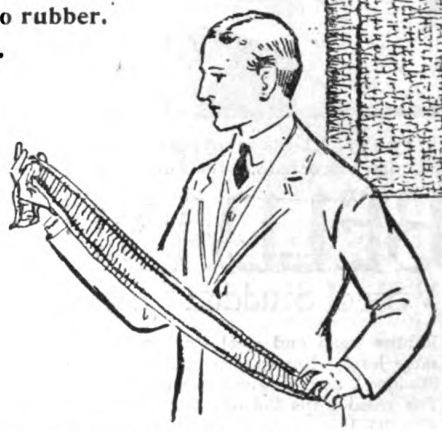
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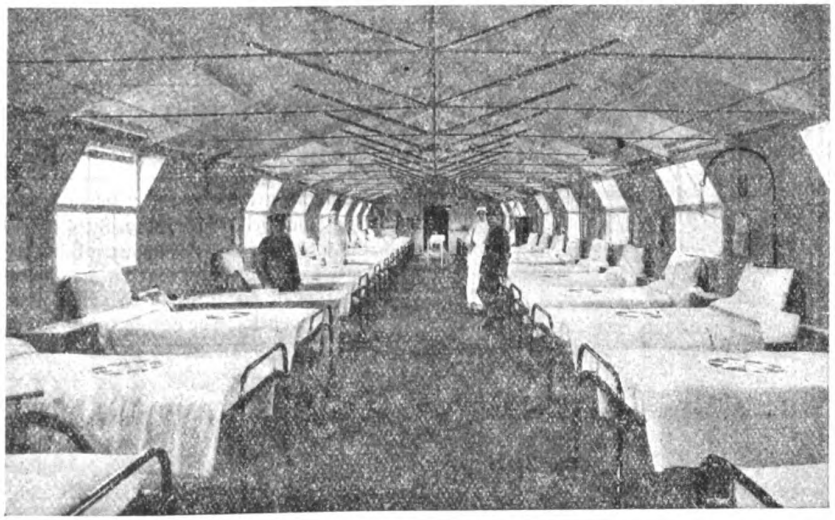
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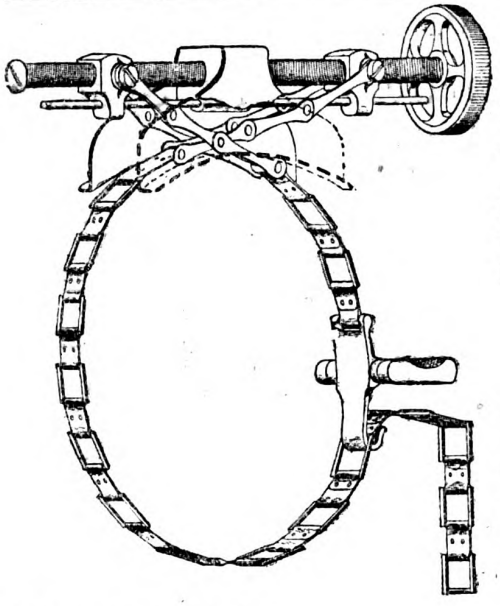
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COMMUNICATIONS:
Academy of Medicine, Paris, 10th Nov., 1908.
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Prepared from carefully selected, fresh healthy glands. Free from ptomaines. Assayed and guaranteed to contain not less than 0·2 per cent. of iodine.

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* These tablets can be supplied either plain or chocolate-coated.

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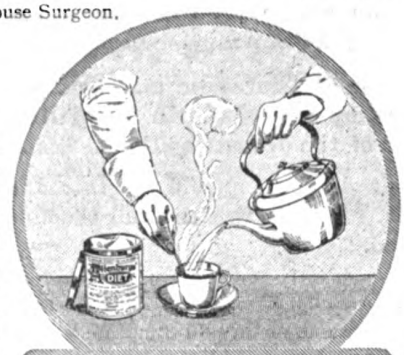
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A PROTECTED SALINE COLLOIDAL SOLUTION OF SILVER.

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In Infant Feeding, to humanise cow's milk and prevent constipation.

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This is a particularly bland and assimilable preparation of Iron, in which e astringency of the ferruginous salt is counteracted by the slightly laxative action the "MALTINE" base.

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For Iodide Treatment without Iodism

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Reliable Uterine Styptic

Contracts the uterus, raises the blood-pressure, slows the heart-beat. Highly effective in menorrhagia, dysmenorrhœa not due to fibroids, and at the menopause.

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Has a bracing effect upon the pharynx and larynx, due mainly to 'Epinine,' a synthetic hæmostatic akin to Adrenalin.

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Figures of Khmer or Siamese-Cambodian warriors, from sculptures of ancient Siam. The first on the left, in violent fighting attitude, is about to strike his adversary with his sword: the second is armed with a heavy club, while the third is defending himself with his shield. Date, A.D. 1100-1200.

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COMBATS SERIES, 171—SIAMESE

TRADE MARK 'KHARSIVAN' BRAND Salvarsan

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Battle scene from an ancient Siamese-Cambodian bas-relief. The warriors fight with bow and arrows—two of the latter being taken from the quiver at a time and shot in quick succession—and with spears or lances which are carried point downwards and are either hurled or used for thrusting. One spear is seen to have a curved point, a not uncommon form of the weapon in these sculptures. Some of the warriors carry small round shields. The helmets are of various forms, some of them recalling those of the ancient Romans. The chiefs are in the characteristic Siamese attitude for chariot-fighting: one foot is in the chariot while the other rests on the back of one of the horses where a pad helped to maintain it in position. Date, A.D. 1100-1200.

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HOEFFTCKE'S EXTENSION APPLIANCES.

Ambulatory Treatment of Fracture of the Limbs; Tuberculous and Arthritic Disease of Joints.

By C. A. HOEFFTCKE,
7, Harley Street, London, W. 1.

(*Continued from Sept. 8th.*)

WHAT IS ARTHRITIS?

DISEASES of joints are mainly either of tuberculous origin or either septic, such as gonorrhœal, staphylococcal, streptococcal, or coliform.

Many of the latter group are vaguely called rheumatoid. On closer examination some of these cases may have their origin traced to some overlooked primary focus of infection, tonsil, teeth, intestine, &c. In others the cause is not traced satisfactorily.

The exciting cause of the disease in the joints can in the majority of cases be traced to an injury. At the time of the injury the joint is painful; the patient prevents the slightest movement. The blood-supply which has to bring the recuperative substances to the injured part is slowed down through non-exercise of the joint and offers a fair field to the invading bacilli.

A suitable vaccine or counter-irritation by means of massage, electricity, passive or active movements, may heighten the power of resistance in the blood, and by this means effect a cure, especially in very early cases.

When the disease is in a more advanced state and cartilage or even the bony surfaces are attacked the case seems almost hopeless. The pain does not allow the joint to be moved, the muscles contract through the patient's endeavour to bring fresh surfaces of the joint in contact, and deformity is the result. If the tension of the muscular tissues can be released and the joint surfaces pulled apart, in other words, if the joint is extended, the pain ceases and the joint can be moved. The normal blood-supply can be restored through the upright position of the body and exercise, and the joint surfaces recover, and so effect a cure.

To maintain extension between the joint surfaces many appliances have been invented, amongst which Sayres', Hessing's, and Thomas's splints figure prominently, but in all these the pubic bone has to bear the greatest pressure, which is painful; in consequence, the patient contracts his muscles and defeats the object of the appliance—namely, extension.

I claim for the appliance which I have invented that the weight of the body and counter-extension point is transmitted entirely upon the tuberosity of the ischium, which is adequately protected by the gluteal muscles, leaving the pubic bone quite free from pressure, so that the patient is enabled to walk and bear a continuous extension equal to 20 pounds or even more without discomfort.

The absence of pain in the joint when extended, the upright position of the body, and exercise improves the general health, which is also a mighty factor in the combating power of the blood-supply.

The ambulatory treatment with Hoefftcke's Extension appliance for tubercular and arthritic joints, and also for fractures, has been described and illustrated year by year since 1913 by eminent surgeons and physicians in the leading medical journals, showing the excellent results which can be obtained by its application.

To make a comparison between the conservative treatment by means of rest and Thomas's splint and my ambulatory treatment I cite the following case, one out of a good many.

Miss R. A. Tuberculous hip.

Treated at first with weight extension in bed and afterwards with Thomas's splint for nine months by two of the leading surgeons of the Royal Orthopædic Hospital.

At the end of this time there was apparent shortening of about two and a half inches and an X ray photograph showed the head of the femur to be partially absorbed.

Another opinion was taken and my ambulatory treatment advised.

As soon as my Extension splint was applied the child commenced to walk and the general health improved rapidly.

After a time it was decided by the surgeon in charge to overcome the adduction. The patient was taken into Great Ormond-street Hospital for Children in the beginning of October, 1914.

The senior consulting surgeon subcutaneously tenotomised the adductors, and I manipulated and abducted the joint on my Extension table under an anæsthetic and reduced the shortening from two and a half inches to three-quarters of an inch. I then put the pelvis and both limbs in the abducted position into plaster, taking care not to release the extension, even for a second, during the operation or subsequent treatment, which is most important.

Three days afterwards the temperature was normal.

A fortnight afterwards I took the plaster off and adjusted my Extension splint to the improved position.

A week after the patient was discharged from hospital, walking well without the slightest pain with fair movement in the hip-joint.

My splint was worn until April, 1916, when it was taken off at night, and in September, 1916, it was taken off altogether. The shortening is still three quarters of an inch, which is not noticeable in walking. Instead of the patient having the usual stiff hip, with considerable shortening and a high-boot, the result now is that after having been under my Extension treatment for two years since the operation the child is able to dance and jump about as well as any other healthy one, with perfect movement in the hip-joint, and has done so for the last year without any artificial help and without recurrency of the disease.

Many arthritic and tuberculous hip- and knee-joints have been treated in this way, with equally good results, of which I shall be glad to give particulars to any inquirers.

(*To be continued Dec. 15th.*)

Bradshaw Lecture
ON
THE CAUSES OF DISEASE.

Delivered before the Royal College of Physicians of London on Nov. 8th, 1917,

BY ERNEST S. REYNOLDS, M.D. LOND., F.R.C.P.,
LIEUTENANT-COLONEL, R.A.M.C.(T.); PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF MANCHESTER; SENIOR PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY.

MR. PRESIDENT AND GENTLEMEN,—I am deeply sensible f the honour which has been done me in asking me to give ie lecture to perpetuate the memory of Dr. William Wood radshaw. Some of the details of his life were given by my redecessor, Dr. Newton Pitt, in 1910, who describes him as ultivated, refined, but somewhat eccentric. He must have een much appreciated by his contemporaries, for he was ranted a degree without examination by the University of xford in 1847, was elected a Fellow of the Royal College of urgeons of England in 1854, and a Member of this College 1 1859.

INTRODUCTORY.

I often think that benefactors who endow lectureships ust possess a grim sense of humour, for they make at least ne person once a year come to a block in the busy traffic of edical practice and cause him to think and, worse still, to t his thoughts into cold, relentless print. In the strenuous mes in which we live at present a complete block is impos- ble, and as a result one's thoughts are constantly jostled; id this must be my excuse for the many imperfections of is lecture, in which I have found it beyond my powers to ach the high standard set me by my predecessors.

I have chosen for this lecture the old but none the less portant subject, the Causes of Disease. I shall probably ve nothing new to say, but in the exploration of the many w forests into which modern medicine has led us, with its any new names and many new methods, it is well to avoid t being able to see wood for trees. If the money expended id the labour involved in the administration of the National surance Act had been used to combat causes instead of fects, for my part I think it would have been ultimately of eater good to the community. If causes were more care- lly considered there would not be the discreditable evidence often given by members of our profession in the Law urts, especially in cases under the Workmen's Compen- tion Act. If causes were more carefully weighed we should t have the ultra-specialist assigning the majority of diseases causes peculiar to his specialty, the neurologist treating a atica really due to an impacted uterine fibroid tumour, the næcologist or the nasal surgeon performing operations on urotic patients the seat of whose troubles is really in the ain; nor the abdominal surgeon operating for gall- nes when the patient is suffering from periodic bilious miting due to migraine; nor hear of successive operations another patient on the colon, appendix, duodenum, and ll-bladder to cure pains due to the gastric crises of tabes rsalis; nor advising the removal of a supposed gastric ncer because the patient was suffering from the wasting of aves's disease—all instances which have recently come my own notice.

My thoughts have been specially directed to this subject causation by trying to discover the cause of that very tressing and prevalent affection, disseminated sclerosis, which more anon, and also by reading a recent small ume by our colleague, Dr. Mercier, entitled "Causation d Belief," a book, if I may say so, of excellent merit, and, course, of much clarity and infinite wit, and which, I nk, should be read by every medical man.

DEFINITION OF DISEASE.

We must first have some definitions. I have been prised to find no definition of disease which seems isfactory. It is obviously the converse of health, ich is defined by Professor Adami as a state stomary to a series of individuals in which they per- m their functions easily and unconsciously. But much more than this is necessary to constitute health. A man with much increased blood pressure, another with compensated mitral disease, and a third with glycosuria may all perform their functions easily and unconsciously, but they are not healthy and would be rightly refused for life assurance. The changed anatomy and function of organ and tissue are of paramount importance as well as the man's feelings and present abilities. But in this connexion we are at once confronted with two difficulties. First, there is no such thing as a standard man, as no two people even of the same race or same family are exactly alike; but we can without difficulty imagine an average man who is a mean between others varying but little in structure and function. The second difficulty is that of advancing years, for after reaching a state of maturity a man's tissues and functions change and decline. Now, I should be sorry to include these changes as disease, to imagine that all of us over 50 years of age are in a state of disease. These changes are natural processes, like the falling of the leaves in autumn, and may be defined as those changes found on an average at any particular age in a particular race; it is partly on these normal average changes that tables of expectation of life are constructed. Abnormal changes due to age are, of course, those that occur years before they occur in the average man—the early whitening of the hair, early degeneration of blood-vessels, early changes in nerve tissue, and so on.

These two difficulties set aside, I think we may safely define *Disease* as that condition of an individual in which there is, apart from normal age changes, a harmful change of the structures or functions or sensations usually found in the average man of any particular race. This definition will include neurasthenia and hysteria amongst diseases, but will not, of course, include malingering.

DEFINITION OF CAUSE.

As regards Cause, the best definitions I know are those of Dr. Mercier, whose views I will put as shortly as possible. He first defines *Effect* as a change connected with a preceding action, or an unchange connected with an accompanying action (such as the unchanging steady movement of an engine) on the thing changed or unchanged. A *Result* is the changed state of a thing on which the effect has been produced. Endocarditis of the mitral valve is the effect of the action of germs on the valve; mitral stenosis is the result. A *Cause* is the action or cessation of action connected with a sequent change or accompanying unchange in the thing acted on. He then makes a strong point about the difference between cause and *Condition*. The latter is a passive state of or about the thing acted on by a cause and material to the effect. It may be a favouring condition where more of an effect will be produced by a cause if the favouring condition is present; or a necessary condition where an extra effect or an earlier effect is produced when the necessary condition is present.

Dr. Mercier points out that age, sex, race, time of year, and climate are frequently put down as causes of disease. But these are not actions but are passive states and are therefore not causes. The age of 60 years, the female sex, the negro race, the winter, the climate of Uganda are not causes of disease, but they are conditions in which certain actions especially or only occur and are therefore favouring or necessary to the effect produced. Strictly speaking, this is correct and in the close investigation of causes must be fully allowed for. But in a wider sense condition may be for convenience included in all the necessary circumstances precedent to an effect produced and in this sense Dr. Mercier himself recognises the term in his chapter on the causes of death.

METHODS OF ASCERTAINING CAUSES.

We must now consider shortly the methods of ascertaining causes. The five canons of inductive logic put forward by John Stuart Mill Dr. Mercier clearly shows not only to be unsatisfactory but often useless and often absurd and in their place he gives 12 methods which are worth quoting:—

1. Instant sequence of the effect on the action.
2. Subsumption of the case in hand under a general law.
3. Assimilation of the case in hand to a known case of causation.
4. Association of the action with the effect when other material action can be excluded.
5. Association when the association is of proved constancy.

6. Association when, though inconstant, the association is more frequent than casual concurrence will account for.
7. Association when, though itself inconstant, the associated effect has constant peculiarities.
8. Concurrent and proportional variation of the action and the effect.
9. Common rarity of the action and the effect.
10. Correspondence of a quality in the effect with a quality in the agent.
11. Coincidence in space of an action or a condition with the effect.
12. Coincidence in time of the action with the effect.

Instances of these methods are of course given by Dr. Mercier, but all of us can quite easily find instances in medicine, and can see the value of the methods in ascertaining the causes of disease. In many diseases in which the exact cause is not known, such as measles, Hodgkin's disease or tetany, we may make shrewd guesses by the use of these methods. But in other diseases, such as true tic-douloureux, spleno-medullary leukæmia or sclerodermia, we have not sufficient knowledge of antecedents and no similarities with other conditions, so that at present no cause can even be guessed at.

Of the many fallacies found in trying to ascertain cause, one of the commonest is the *post hoc propter hoc* argument. This may be and often is perfectly true in the sense that a cause precedes an effect. But to be true a connexion must be shown to be established by one of the methods of causation "between the action that is *ante* and the effect which is *post*." But it cannot be too strongly asserted that mere sequence does not establish causation. A man strains himself while lifting a weight; he continues his work, perhaps, with some difficulty; two days afterwards he commences with pneumonia and dies, and a claim for compensation is put forward, and it is often most difficult to persuade a lawyer that there is no necessary connexion between the original slight injury and the death. A man cleans out drains from a dye-works and gets chrome eczema and chrome holes on the hands. He happens to vomit the same day that he cleared the drains; he continues to have dyspeptic symptoms and occasional vomiting and loses flesh, and a few months after dies from a gastric cancer, and without being able to show the slightest connexion (except mere sequence) between the injury to the hands and the gastric cancer a claim is made for the death. But it is common knowledge that legal compensation actions abound with such cases; and there is no doubt that the supposed efficacy of many drugs is falsely based on the *post hoc propter hoc* argument, the real healer being nature.

Coincidence.

Another fallacy, which is of such enormous importance that I think it worth while to dwell on, is that of pure coincidence. It depends, of course, principally on the fact "long ago pointed out by Bacon that there is in the human mind a peculiar tendency to dwell on affirmative and to overlook negative instances" (Fowler's "Inductive Logic"). To my mind this is the explanation of most of the curiosities of telepathy, thought reading, "dreams coming true," and of psychic research, and not unfrequently is the explanation of things being falsely ascribed as causes of disease. The number of coincidences in life is actually enormous, but relatively is only a very minute fraction of the myriads of thoughts, dreams, and sensations which continuously crowd our daily life awake and asleep. Think of the innumerable incidents which fall on the eye and the ear in a walk through the city; to the great majorty of these we pay no heed, but immediately one incident fits in with another a coincidence is established; we fix on this and remember it and very often call it, instead of a pure coincidence, an act of causation. Let me give some examples of pure coincidence.

On the morning of Feb. 14th, 1876, Elisha Gray registered his patent for a telephone at the Washington Patent Office; on the afternoon of the same day Graham Bell, quite independently in every way, registered his patent for a telephone in the same office. A few years ago a friend of mine was reading Canon Gore's book "Lux Mundi"; in order to keep the back clean she picked up from a table near by the discarded paper cover of another book and put it on the one she was reading; shortly after it was found that the paper cover's title was "The Light that Failed" by Kipling. A few weeks ago I casually opened a periodical lying on a hotel table and fronting me was a coloured print of Constable's Haywain; a few minutes afterwards I opened a box of cigarettes and in it found a print of the same picture.

In professional life coincidences are common; we all have "runs" of particular cases, or cases from particular districts or from particular doctors.

Four years ago I remember three cases of myasthenia gravis at one time in the Manchester Royal Infirmary, two of them being under my own care. About the same time I saw three cases of Bence-Jones's albumosuria within a few months. Recently I saw two cases of unrelated Thomsen's disease in one week, and the next week a case with all the usual signs of Thomsen's disease which had apparently come on after shell shock, but in whom I found no family history. A few weeks ago late one night I wrote a medico-legal report on a case of death from pulmonary embolism occurring in a man whose left tibia had been fractured by a falling stone while he was at work; the first case I saw the next morning was an officer with a pulmonary embolism from a fractured right tibia due to gunshot.

Coincidence or Causal Connexion?

In these cases of pure coincidence I am told by a mathematical friend that there is no formula which applies to them. Percentage is no test. Suppose the same 1000 persons to start at different times of each day from the East-end of London, walking at different speeds, and another 1000 to start from the West-end; the number of times each year that John Smith (coming from the East) will meet Thomas Brown (coming from the West) at St. Paul's may be quite considerable, and if no causal connexion can be shown will be pure coincidences. But William coming from the East may meet Mary coming from the West at St. Paul's only on two occasions, although each one passes that spot each day, but if the two meetings were pre-arranged by themselves or their friends the meeting is an act of causation. Similarly in disease; we sometimes find epileptics who have mitral stenosis, but these are two very common affections and are certain to meet as pure coincidences in the same individual fairly frequently. Trench fever is common, so are lice on the bodies of soldiers; and in the same way it must not be necessarily assumed that lice are the sole carriers or in any way the carriers of trench fever, although they may be one method of conveyance. I have seen a very great number of cases of disseminated sclerosis since the commencement of the influenza epidemic in 1889, but one must not assume that influenza is of necessity a cause of disseminated sclerosis.

Let us take now low percentages. Late nervous affections of the tabetic or general paralytic type are said to occur in about 7 per cent. of all persons who have had syphilis. Yet no one doubts the causal connexion for two reasons: first, that the observations are being constantly corroborated; and, secondly, that it conforms to the methods of ascertaining causes. In the epidemic of arsenical beer poisoning in the Manchester district in 1890 I had about 1200 cases of arsenic poisoning under my care; amongst them I had 16 cases of herpes, only 1·3 per cent. Was this a pure coincidence or was there a causal connexion? The latter certainly, for as a matter of fact, knowing that others had found herpes in arsenical poisoning, it was the presence of herpes which made me look for the arsenic. Actual pain and fine tremors are very rarely indeed found in lead-poisoning. Personally I have only seen these symptoms in two or three cases; but I have no doubt that there is a causal connexion, because others have seen them, though rarely; and, knowing that lead will cause motor paralysis, it is not unreasonable to suppose that it may rarely cause pain and tremor. Perforating ulcer of the foot I have only seen, I think, twice in diabetes mellitus, but I have no doubt it is secondary to the neuritis and changes in the sensory roots of the spinal cord found in that disease. Some years ago I published in *Brain* an account of four families in two or more members of which disseminated sclerosis occurred. Since then I have had no fresh instances of familial incidence in this disease, and, although the disease is common, hardly any other observer has noted it as a possible family affection; therefore I am inclined to believe my cases were more or less coincidences. I also published a note in the *British Medical Journal* of instances in which I had seen disseminated sclerosis and Graves's disease in the same person; here, again, no corroboration being forthcoming, I think I was dealing with pure coincidence.

Diseases and Primary Causes.

A glance through any text-book of medicine will reveal an enormous number of diseases with particular "names." This

is as it should be; for without such large numbers of names we could not carry on our personal observation of diseases nor could we communicate our thoughts to others. For old *as it is* I do not think that Hobbes's definition can be too often repeated, that "a name is a word taken at pleasure to serve for a mark, which may raise in our mind a thought *like* some that we had before and which being pronounced to others may be to them a sign of what thought the speaker had or had not before in his mind." (And I should like, in an aside, to say that I consider it an unwarrantable crime for old names to be altered or used in different circumstances without very full justification. "Cursed be he that removeth his neighbour's landmark.") A further study of all these diseases will show, however, that the things that cause them can be narrowed down to a comparatively few classes, so that from a purely prevention point of view the number of actual diseases, considered as primary and not as regards their final effects, is similarly few. For instance, most diseases of the heart are not primary, but are the final results of some infective process; the same thing applies to most glandular affections; liver diseases are often circulatory or due to some poison; very many brain affections are due to circulatory troubles, and diseases of vessels to premature old age, and so on with any other system, the skin, the kidneys, the lungs, or the spinal cord. One has only to think of the numerous diseases set up by three primary causes—alcohol, tubercle, and syphilis—to realise the truth of this.

As an example of remoteness of cause and effect the following may be given.

A few weeks ago I was asked to see a lady who had recently been operated on successfully for an hour-glass stomach. But she insisted that she could not walk and remained bedridden. I was told this was due to hysteria, presumably post-operative. A short examination showed that she was a marked example of combined postero-lateral sclerosis which had been slowly coming on for two years, and was a remote effect of an original gastric ulcer with subsequent alimentary disturbances and anæmia.

A Healthy Community: Probable Diseases.

Let us suppose 1000 healthy men and 1000 healthy women, each aged 20 years, free to marry, with no hereditary taint, put to live in a perfectly healthy island with sufficient flora and fauna to maintain life, and not under a fantastic communistic government, and let us try to imagine from what diseases they will suffer and from what they will die.

Theoretically we may suppose that none of these people will have any disease, and that they will all die aged 70 years owing to the natural processes of age. But as practical physicians, not treating human beings as pure pieces of machinery, we know that no two human beings are exactly alike either in structure, functions, habits, or feelings, and this being so every person responds differently to his surroundings, and therefore some of the inhabitants of our island will suffer from various affections and the ages at death will vary considerably. It will facilitate my suppositions if we agree to include in our study not only the original 2000 inhabitants, but also the next two or three generations, without, of course, any admixture from the rest of the world.

Injuries.

Injuries will inevitably occur. Of purely so-called surgical injuries, varying from burns to fractured skulls, I need not further speak. We must also include injuries due to childbirth, those to the mother and those to the child, the latter partly asphyxial but principally resulting in the many cases of birth palsy, and not unfrequently in some types of epilepsy and perhaps of mental deficiency. Epilepsy in adults, osteo-arthritis, and probably new growths, are often more end results of previous injuries or irritations. Cold and heat applied externally may, of course, cause injuries, whether they result in frostbite or in burns, and it is not unreasonable to call them injuries when they produce other effects. Heat will cause heat syncope, and the sun will cause that form of sunstroke called by Sir Patrick Manson "sun traumatism." I particularly wish to dwell for a moment on the effect of cold. We are all, I think, prepared to admit that "getting cold" produces a condition of lowered vitality which allows certain germs to act and effects occur, and in our broad use of the word *cause* cold would be a cause of these diseases. But apart from germs, will cold or chill cause disease? Personally, I think it may. Take the case of a man who has been "wet through" and had to remain in his wet clothes until he felt chilled. I am prepared to believe, until fresh evidence is forthcoming, that he may as an effect have a parenchymatous nephritis, in a pure case of which I know no evidence which connects it with a germ growth. Again, I am a firm believer in the bad effects of a "draught." The breezes of a mountain top may harm no one, but sitting in the draught from an open window is, to my mind, a pernicious habit. It not only may for the time lower resistance, but can undoubtedly, quite apart from germs, so far as evidence goes, cause facial paralysis and brachial neuritis. I have seen paralysis of muscles supplied by the external popliteal nerve so caused, and in one case a paralysis of the muscles supplied by the fifth cervical root, and I think it likely that many cases of sciatic neuritis are due to cold pure and simple.

Food.—Poisoning.

Food being of prime necessity, I will consider it next. Results of improper feeding will sooner or later appear on our island. Practically each person will differ from every other in the quantity and quality of the food he takes. Some will naturally require more food than others; some will have healthy or unhealthy likes or dislikes for certain foods; others will have food idiosyncrasies; others, according to inclination or opportunity will take too much food, others too little, and so will arise obesity (the commencement of many diseased conditions) or emaciation. Probably many abnormalities of blood pressure are due to improper feeding. Some will bolt their food, causing dyspepsia of various forms. Some may get diarrhœa, others constipation, with its many undesirable effects; but few physicians will, I think, be prepared to accept the formidable and curious catalogue of the effects of intestinal stasis as tabulated by Sir Arbuthnot Lane. From improper proportion of food stuffs some may develop scurvy and others (in infancy) rickets.

Cases of poisoning will certainly occur on our island, gaseous, liquid or solid from animal, vegetable, and mineral sources, and we must include poisoning from putrid foods. We may concede that tobacco smoking is indulged in, and we may get various acute, and more important still chronic, effects from over indulgence, effects which are commoner than is usually supposed. Sooner or later alcohol will be distilled and taken, and at once we add enormously to the number of diseases produced, with possibly also effects on the offspring. Here may also be mentioned poisoning from intrinsic sources, such as presumably may be the cause of pernicious anæmia, rheumatoid arthritis, combined postero-lateral sclerosis, possibly of disseminated sclerosis, and the numerous diseases resulting from altered secretions from glands, ductless and otherwise; some of these poisons may originate from germ growth, others from altered functions and altered metabolism, two classes to be considered later.

Occupation.—Stress.—Metabolic Variations.

Our islanders must, of course, work. If we suppose the work is agricultural, and if more or less evenly divided, no special diseases should arise therefrom. But sooner or later some will work less than others either from getting unduly rich or because of indolent habits. The former may become obese and indulgent, the latter will suffer the usual penalties of underfeeding and also perhaps of depleted homes and of overcrowding, with their usual results to themselves and their children. Sooner or later also other industries will arise which will again by degrees become more and more specialised, and we are at once introduced to the numerous diseases of occupation about which so much excellent work has been done in recent years.

With increased work there will develop (partly as a result of competition, partly of habit and partly of necessity), worry, hurry and stress, often much increased by the tyranny of the insistent telephone and the irritation of the rushing wheel. Stress especially affects the digestive, the circulatory, and the nervous systems. The affections set going by improper or insufficient food, by hurried and irregular meals, by hyperchlorhydria (often, I think, the result of worry and rush) and by constipation I have already touched upon. Functional affections of the heart, tachycardia, palpitation, and actual cardiac dilatation may result from stress. More important still, as leading to so many affections often in the end fatal, we get the increased blood-pressure which in industrial communities is so enormously common and tends to early unnatural

senility. Equally common are nervous affections, hysteria, neurasthenia, psychasthenia, and insanity. I believe that acute congestion of the brain may occur causing prolonged unconsciousness or even delirium, and for my part I am inclined to think that Graves's disease is primarily a nervous affection and not primarily a disease of the thyroid gland. It is a difficult question to decide whether these acquired results of stress are handed down to appear as nervous symptoms in the offspring, for it may be that these results would only appear in certain members of our community who are of a more nervous temperament than the others, and that it is merely the temperament which is handed down. Perhaps some signs in the children may be the results of imitation from living in a household where rush and stress are always occurring. One type of stress, not, I think, sufficiently dwelt on, is that caused by nursing sick relatives through long illnesses, especially when the illness ends fatally. This, of course, occurs principally in women, and is one of the most potent causes of functional nervous disturbance that I know. It is one of the tragedies of life to see a woman gradually becoming more worn, more faded, and less likely to marry as the result of being tied hand and foot to another's sick-bed; and the worst of the tragedy is that very often it is inevitable and "none can succour her."

We have assumed that each of our inhabitants differs from the other, and therefore we may further assume that each will functionate and metabolise differently. For some unknown reasons these alterations in function and metabolism may lead to diseased conditions. Such are obesity, diabetes mellitus and insipidus; gout, hyperchlorhydria, and some altered digestive processes, including constipation; altered functions of the ductless glands, and possibly the tendency for certain secretions and excretions to form calculi. Some altered blood conditions, such as chlorosis and polycythæmia rubra, belong to this group.

Age.

We must now consider abnormal changes due to age. It is permissible here to include congenital affections (apart from those due to injury), many being due to abnormal or arrested development. Later changes may be either general or local. General changes seem to fall more especially on the circulation, leading to diseases of the heart and blood-vessels, with subsequent affections of the brain and spinal cord, with simple-mindedness, loss of memory, definite mental disease, brain and cord softenings, and hæmorrhages. (I would like to draw attention at this point to senile paraplegia from deficiency of circulation in the lumbo-sacral cord described by Sir William Gowers, and not, I think, sufficiently recognised.) Together with these vascular changes must be included the granular kidney, with its multitudinous range of symptoms and signs.

Local changes may affect many organs. Those of the hair and skin are obvious. In the nervous system I would include the following diseases: paralysis agitans, senile tremor, adult chorea, amyotrophic lateral sclerosis, progressive muscular atrophy, and chronic anterior poliomyelitis; amongst mental affections certain of the incurable adolescent insanities which rapidly pass into incurable dementia and various senile insanities. Early degenerations of ductless glands are manifested by myxœdema, and perhaps by some types of Addison's disease; early senile changes in the sexual organs by an abnormal menopause, early loss of sexual power in men, and by early changes in the prostate gland. Early changes in the eye may cause too early errors of refraction or affections of the lens, while changes in the ear may set up deafness or labyrinthine vertigo or tinnitus.

The important point about all these affections is that they are absolutely incurable. In the case of myxœdema the symptoms and signs can be removed by drugs, but the condition on which the symptoms depend remains the some.

Neoplasms.

We must now consider the question of neoplasms, and I will take Dr. Powell White's definition that a neoplasm is an abnormal mass of cells, tissues, or organs resembling those normally present but arranged atypically; it grows at the expense of the organism without subserving any useful function. Teratomata due to faults of development will almost certainly occur in some of the descendants of our original islanders, and also, one must suppose, as no two of our community are alike, that simple tumours will occur, such as warts, moles, fatty tumours, outgrowths of bone or of cartilage. But what shall we say of malignant tumours? Such are not always hereditary, and no one has yet proved that they are in any way caused by germs. So far as I have been able to observe, the commonest antecedent of large numbers of malignant growths is injury, including, of course, irritation. If we say for the sake of argument that it is a cause then we must, I think, certainly admit that malignant growths will occur in our island. But there is obviously something else: everyone suffers, if not injury, then certainly irritation, even if it is only the daily passage of fæces. But not everyone suffers from malignant growth, the unexplained factor is either another cause, or much more likely some condition. So important does this seem that I would urge that research workers on the etiology of new growths would do well to turn aside from the search for the active cause and seek out the condition which allows the active cause to produce its effect. If this necessary condition, whatever it is, cannot occur on our island we shall have no malignant growth and the contrary.

Parasitic Diseases.

I think we must assume that our island will not be free from parasitic diseases. It may be conceded that it is an island in a temperate zone, so that we have not to consider those greatest advances of modern medicine conducted often under enormous difficulties, discomfort, and danger by our brethren in tropical countries. I am not sure that we can exclude flies, fleas, bugs, and lice from the fauna of the island, however glad we should be to do so, and they may act, not only as direct irritants, but as disease carriers. Other animal parasites such as the itch insect and the various intestinal worms we may reasonably exclude.

Diseases due to Micro-organisms.

We almost certainly cannot exclude germs, for even in non-pathogenic states they are apparently necessary for the continued existence and for the decay of plants and animals. No one knows how the first germ started, but the more one wonders how the first germ became pathogenic the more fascinating does the subject become. I greatly regret that my ignorance of modern bacteriology will not allow me to discuss the matter as I should like, but I venture to refer to the interesting address on "The Nature and Degree of Specific Differences amongst Bacteria" given by Dr. Andrewes to the Pathological Section of the Royal Society of Medicine on Oct. 21st, 1913.[1] There he points out that generic differences amongst germs are probably of great antiquity, and that certain small genera, such as *Bacillus anthracis*, *Bacillus mallei*, *Micrococcus melitensis*, are very fixed, but that other large genera, such as the streptococci, the diphtheroids and the coli-typhoid group, are very variable and show a readiness to gain or lose their physiological characters under the direct influence of their environment and that in many cases by artificial means a non-pathogenic germ may become pathogenic and vice versa. This subject was also fully dealt with by Professor Adami in his recent Croonian lectures, in which striking examples were given.[2]

It is highly probable that we all keep on the premises, so to say, what I will call domestic germs, which, as a rule, remain tame, but granted certain conditions of the host, such as starvation, fatigue, or exposure to cold, they become wild and cause disease. Such, for instance, are probably the *Micrococcus catarrhalis*, the pneumococcus, the staphylococcus, the *Bacillus coli*, and the germ of rheumatic fever.

Other germs, such as the tetanus bacillus, the *Bacillus aerogenes capsulatus*, and many of the bacteria of putrefaction, perhaps normally present in the soil, only become pathogenic if they are put into suitable surroundings. I am told that there is a possible family connexion between a bacillus growing in Timothy grass, through the bovine to the human tubercle bacillus. Other bacteria and protozoa may live in perfect harmony with their hosts (such as *Bacillus pestis* in the rat-flea and certain protozoa in insects and birds), but are highly pathogenic in man.

Other micro-organisms living in the human body belong to groups which seem to have their members closely allied, but in which some are non-pathogenic, others highly pathogenic, and in which quite possibly the latter may have arisen from the former. Such, for instance, are certain organisms of the throat and nose closely resembling Weichselbaum's bacillus, and, again, the enteric group, varying from *Bacillus faecalis alkaligenes* to Gaertner's bacillus, the paratyphoid, and the typhoid bacillus.

[1] THE LANCET, 1913, ii., 1239.
[2] THE LANCET, 1917, i., 921, 961; 1917, ii., 20.

So that although we may not allow that certain very fixed types such as the germs of syphilis, measles, scarlatina, or small-pox would affect our islanders without introduction from overseas, it is reasonable to suppose that many diseased conditions due to germs may arise within.

Heredity.

The last class of possible causes of disease is heredity. Our 2000 persons we have supposed to be free from inherited taint. Is it possible for any of the first generation of their offspring to inherit disease conditions or tendencies owing to the habits or environment of the parents? This question has been so fully dealt with in Professor Adami's recent Croonian lectures and decided in the affirmative, that it is almost unnecessary for me to touch upon it, except to say that I thoroughly believe such inheritance may occur. And whether it is due to an action on the somatic plasm or the germ plasm is a matter of more or less indifference to the physician or to the hygienist, and I certainly do not propose to deal with what the late Sir Jonathan Hutchinson calls the logomachy of Weismannism. I think it quite likely that alcohol and lead poisoning in the parent may affect the offspring. Nor does it seem unreasonable to suppose that the effects of under-feeding or over-feeding may have their results in the children; or that such infective conditions as we have allowed may develop in our island should produce an hereditary lessened or increased immunity. And if we consider a few more generations we can easily see how many metabolic and nervous diseased states may result. But I shall consider hereditary disease again in a few moments.

Summary of Causes.

I have now shown how in our community of originally healthy persons and their progeny for, say, two or three generations disease may occur, and deaths at varying ages may result without any contamination from the outside world, and I have classified the causes of these results into:—

1. Injury.
2. Food and feeding.
3. Poisons.
4. Occupation.
5. Stress.
6. Abnormal metabolism.
7. Abnormal age changes.
8. Neoplasms.
9. Parasites.
10. Heredity.

It goes without saying that the percentage of deaths from natural changes due to age will be much higher than in England to-day,

Effects of Immigration.

If we now allow unrestricted immigration into the island we shall not introduce any new cause of disease, but we shall much intensify at least three of our causes—namely, stress from increased competition, parasites, and heredity. Those parasitic affections will especially act as causative agents which are of fixed types, such as syphilis, tubercle, the exanthemata, and so on, and we shall presently see what an enormous factor the parasite is in the production of disease.

HEREDITARY DISEASES.

The subject of hereditary diseases must be considered in more detail. They can be roughly classified into eight groups: 1. Direct infection, of which syphilis is the one example, though some, such as Hutchinson, are prepared to believe that tubercle may be actually conveyed into the ovum. 2. The possible results of extrinsic poisoning in the parents by such agents as alcohol or lead. 3. Structural changes. These may be the obvious external changes, such as supernumerary or webbed fingers and toes, coloboma, or albinism. Or they may be internal structural defects, such as found in hæmophilia, and perhaps myotonia congenita and amyotonia congenita should also be included; or latent structural defects which show themselves later as various skin diseases—psoriasis, lichen xeroderma, urticaria, or chilblains. For those who believe in the heredity of cancer, and I think most clinicians do, the unknown latent conditions underlying the affection may be perhaps included in this group. 4. Altered metabolism, as, for instances, gout with its numerous manifestations, of which some only may be handed down, diabetes, and obesity. 5. Idiosyncrasies to certain foods or odours. 6. Tendency to germ infection, possibly from some hereditary lessened immunity. The great example of this group is, of course, tuberculosis. But I wish to take this opportunity to emphasise the enormous influence of heredity on acute rheumatic fever, an influence which I do not think is sufficiently pointed out. To my mind it is of equal importance as regards ultimate human suffering to tuberculosis. The more one inquires into the family history of rheumatic patients the more one is impressed with the number of families in which the parents, especially perhaps the mother, and the brothers and sisters have been affected with rheumatic fever, valvular disease of the heart, with chorea, or with various very definite rheumatic skin affections, such as erythema nodosum, with purpura or with that variety called Henoch's purpura which personally I believe to be merely a manifestation of rheumatism. 7. Nervous irritability or instability. In this group we have, *par excellence*, epilepsy, habit spasm, stammering, migraine (on the sensory side), asthma, the alcoholic habit, the various types of neurasthenia and certain insanities, many being of the curable type. 8. Tendency to abnormal age changes, in which I include certain insanities of the progressive incurable type, such as incurable adolescent insanities and early senile insanities; adult chorea; Friedreich's ataxia and various types of myopathic paralysis, including family peroneal atrophy; and finally, and most important, the changes produced by hereditary increased blood pressure with early arterio-sclerosis.

Now it will be at once quite rightly argued that to call a disease hereditary does not explain its cause. The heredity is generally only a condition, and some of the other nine classes of causes have to be brought in as factors before an effect is produced. But the importance of heredity in determining the future of a race is so great that it is quite legitimate, I think, to give it a place in my list.

CONSIDERATION OF ENGLISH MORTALITY TABLES FOR 1913.

We can now suppose that by unrestricted immigration and in the course of many generations the health and disease of our island has reached the condition in which England is to-day. In dealing with this we have unfortunately only very imperfect statistics of morbidity. We can obtain roughly the number of insane and the types of insanity, a class more cared for by the State than any other; or the numbers and character of certain notifiable infectious diseases, but that is all. For other information we must turn to the mortality tables of the Registrar-General. These are notoriously imperfect, depending, as they do, on certificates of death, which are, I am afraid, sometimes so worded as to give as little information as possible. To show how little they indicate real disease incidence, only 1800 deaths are attributed to acute rheumatic fever, which with its sequelæ is one of the most potent causes of disease; only 1200 to rheumatoid arthritis, another common affection; only 2000 to syphilis; whereas 26,000 are classed as syncope, merely the final cause of death of many different diseases.

But in spite of these defects the mortality tables deal with such large numbers that some hint, at any rate, is afforded of the morbid state of the community, and they are therefore worth examination. I shall take the year 1913 (so as to exclude war conditions) and shall only give approximate figures. There was a total of 500,000 deaths.

Of these, 134,000 (over one-fourth) were due to infectious diseases directly, and to these should really be added an enormous number of deaths ascribed to heart, lung, kidney, and nervous diseases, the primary cause of which was germ infection. Of these 134.000, 50,000 (one-tenth of the whole death-rate) were due to tuberculosis in some form, 37,000 to pneumonia, 10,000 to measles, 9000 to epidemic diarrhœa, 6000 to influenza, and 5000 to whooping-cough. 46,000 were attributed to respiratory diseases (excluding pneumonia), of which 39,000 were due to bronchitis, but this is very frequently merely a terminal phenomenon. 39,000 (nearly one-twelfth of the whole) were due to cancer or other forms of malignant disease, 38,000 to disease of the blood-vessels, 30,000 to diseases of the digestive system, 27,000 to nervous diseases, 27,000 to heart disease, 26,000 to syncope (which is again a terminal phenomenon, but may include many valvular affections of the heart), 20,000 violent deaths, 15,000 to Bright's disease, and 12,000 to atrophy and debility (a classification of no value). There were 18,000 premature births. Old age is accredited with 30,000 deaths, or one-seventeenth of the whole.

As I have said, these figures give us some hint of disease conditions, but certainly nothing more than a hint of prime causes. For instance, three most potent prime causes have very low figures—venereal diseases, 2000; alcoholism, 1900; and rheumatic fever, 1770. I can understand a certain diffidence in entering syphilis or alcohol as a prime cause on a death certificate, but there seems to me to be no excuse

for not naming acute rheumatism, except, perhaps, that it is even not yet sufficiently recognised how slight, especially in children, its manifestations may be, nor that chorea in children is for all practical purposes a sign of rheumatic fever, and, finally, that the enormous preponderance of cases of organic diseases of the heart valves is due to previous acute rheumatism.

It is interesting to compare my list of causes of disease with these figures, however imperfect and unsatisfactory, of the causes of death, to imagine how many of the 38,000 deaths from disease of blood-vessels were due to abnormal old age or to stress and how many to syphilis, what proportion of the 30,000 ascribed to the digestive system was due to food and feeding, and what proportion of nervous diseases was to be attributed to germs, to stress, to abnormal old age, or to heredity.

DISSEMINATED SCLEROSIS.

A disease in which I have been interested for years is disseminated sclerosis. It is in my own personal experience almost the commonest of organic diseases of the nervous system in which morbid changes can be found. It is a most distressing malady, not only to the patient, but also to the physician, for it comes on without any known cause, principally affects those in the full bloom of life, is no respecter of persons, and has a most crippling effect for years before it causes death. In my own experience it is much more common in women.

Very frequently, indeed, much more so than is generally supposed, it first affects the optic nerve rather rapidly; this affection is generally temporary and may be followed by a long intermission, often lasting years. With or without this initial symptom sensory symptoms, often very indefinite, occur, and rarely there may be severe pains not unlike those of a definite neuritis. At the same time or later there are disorders of motion, which may be slight, like an indefinite ataxia, or much more marked from affection of the pyramidal tracts or of ascending nerve tracts; very rarely actual wasting of muscle may result. A very marked feature of the disease is the occurrence of intermissions and remissions, the longest intermission, as a rule, being between any early eye symptoms and the sensory and motor phenomena; so long, indeed, is this interval that unless closely questioned patients never mention the original eye symptoms and certainly never connect them with the subsequent symptoms.

Causation.

Pathologically the lesions are very widespread and their locality points to something distributed by the lymph in the vessels or cerebro-spinal channels, or by blood in the blood-vessels, and probably more immediately by the former. The cause, whatever it is, has a predilection for the medullary sheath and the neuroglia, which are the parts primarily affected, and apparently the chronic inflammatory changes are secondary. The astonishing thing is the very sharp limit to each diseased spot, one indeed so marked that Strümpell supposed, but not on sufficient grounds, that the disease is largely of an endogenous nature due to a congenital abnormality of those parts affected, and that in this way a multiple gliosis results. I do not think some interesting observations made by my colleague, Dr. Williamson, in his work on "Diseases of the Spinal Cord," have been sufficiently noticed. He says:—

"The shape of the patches and their regular margins in disseminated sclerosis are suggestive of the infiltration of the nerve structures with a fluid of destructive character, the margins of the patch being determined by *physical conditions*. If a spinal cord which has been hardened in Muller's fluid be touched on its external surface or on the cut surface of a transverse section, with a minute drop of deeply coloured fluid such as a strong solution of aniline blue-black, the fluid diffuses itself into the cord substance, and a stained patch is formed with a fairly regular, curved, clean-cut margin, a margin which passes through the various structures of the cord abruptly and indifferently, and thus resembles that of a patch of disseminated sclerosis. This fact is suggestive of the patches being caused by the infiltration of the nervous system with a toxic fluid, their shape and margin being determined by physical conditions."

In a footnote he adds:

"Alcohol and several other chemical fluids have the power of dissolving out the white substance of Schwann from the nerve fibres of specimens of the cord and brain kept in these fluids for long periods, whilst the axis-cylinders and other structures are left. Thus a microscopic appearance is produced on section which somewhat resembles that of one form of the sclerosed patches. This fact is of interest, though the disease has no relation to alcoholism."

I think Dr. Williamson's observations certainly suggest that the toxic agent may be in the cerebro-spinal fluid.

If we use our tables of causation of disease we can rule out injury, food, occupation, stress, age, neoplasms, and heredity; also all extrinsic poisons. But we cannot set aside intrinsic poisons, nor altered metabolisms, nor parasites growing either in the nerve tissues or forming toxins which act on the nerve tissues. It was a long time before it was proved that acute anterior poliomyelitis was due to a germ, and we do not know at the present time whether the long-drawn-out and peculiarly intermittent symptoms of myasthenia gravis are due to germs, altered metabolisms, or intrinsic poisons, the only definite effects found being lymphorrhages in the muscles and some fatty degeneration of an enlarged thymus gland; and although of recent years the *Treponema pallidum* has been found in the brain of general paralytics it seems more probable that the essential changes of this affection and of tabes are due to the toxin rather than to the local growth of the parasite.

Consideration of Possible Causes: Need of Research.

On the whole, by subsumption of the case in hand under a general law and by assimilation of the case in hand to a known case of causation, it seems certain that disseminated sclerosis is caused by a poison acting on certain special nerve tissues. If this is an intrinsic poison, which I am quite prepared to believe, it is probably either a perverted internal secretion or a poison derived from the alimentary canal, possibly as the result of constipation. In this connexion it is most important to keep in mind the postero-lateral changes found in the spinal cord in diabetes, pernicious anæmia, and many exhausting diseases. If from a germ, is it from the germ of some known fever, such as measles, typhoid fever, or influenza? I think from the previous histories this can be at once answered in the negative. Or may it occur as a late result of *any* previous germ infection independently of nature? I think this should also be answered in the negative, not so much because some of the patients say they have never had any previous germ infection (in which they may be mistaken), but more because it seems to me that from analogy it is highly improbable that a disease which in spite of its many varieties has so very distinctive a character both clinically and pathologically can be caused by any odd germ or germs which may have previously affected the patient. It may be finally noted that the disease resembles in many respects those nervous affections caused by syphilis, although we know that syphilis is not its cause, nor do the pathological changes resemble those produced by syphilis. But in its early affection of the eyes, its widespread distribution of lesions, its intermissions and remissions, and its long-drawn-out duration, the similarity is striking.

If due to a germ I am convinced it is a specific germ as yet quite unknown. Whether the intermissions and remissions are due to the continual presence of the germ in the body with varied powers of immunity from time to time or whether to fresh infection is not known. If due to an intrinsic poison the remissions would, of course, be due to the manufacture and absorption of fresh masses of poison.

I am sorry to have to confess that in spite of minute inquiries into the previous histories of large numbers of cases of this disease I have so far entirely failed to elicit any evidence of any common factor, although my questions have covered a large field. There is evidently another field to explore, and I would strongly recommend to young members of our profession that here is a subject of research well worthy of attention and in which the discoverer of the true cause will gain a rich reward.

OTHER DISEASES.

Another common and very distressing affection which needs urgent investigation as to its real cause is rheumatoid arthritis, for although I am willing for the present to admit that it is due to some toxin, this is by no means proved. Nor is it known if it is due to a germ toxin or to some intrinsic poison arising from imperfect metabolism.

Epilepsy and migraine, two very common and disabling affections, I have classed in the hereditary group; but how glad we should be to know the real cause.

Two other diseases, fortunately not common, I find a difficulty in classing—namely, spleno-medullary leukæmia and true facial neuralgia. The former seems allied to

lymphatic leukæmia, which in many respects, especially in its frequently rapidly fatal results, resembles a germ infection; but in symptoms and course spleno-medullary and lymphatic leukæmia are so different that one sometimes wonders why they have generally been described together, unless it is that both are due to the same cause, but one running a very acute course, the other a chronic one, just as may happen in some other germ diseases, as, for instance, tuberculosis or glanders.

I have narrowed down diseases from the point of view of cause into ten groups only. This may appear surprisingly small and surprisingly simple. Allowing for that latitude which is always necessary when looking at very many objects from a large standpoint, I do not think I have taken many liberties in putting any particular disease into any particular group, although I do not pretend that the classification is one strictly conforming to the logical laws of classification. But I think the grouping is a convenient one, and I trust that on testing it will be found to stand criticism, and may be helpful in enabling us to steer a true course to reach the haven of real cause, and after reaching it to perform our next and highest duty, real prevention.

THE LATER HISTORY OF CASES OF GUNSHOT WOUNDS OF THE CHEST, WITH RETAINED MISSILES.

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THE question of what becomes of soldiers who have been shot in the chest and in whom the missiles are still present is one of great importance, as it bears directly upon the treatment of such cases. Should such missiles be immediately removed or should they be left alone? are the questions which are being much discussed at the present time. In a general way it may be said that among the French medical officers the tendency is frequently to attack such cases surgically, while amongst the British practitioners a more conservative policy is usually adopted.

The matter can only be settled when we have sufficient data to enable us to form an opinion as to what harm such foreign bodies do when left *in situ*, and also we must know what is the immediate risk to life of active surgical interference. This war is, unfortunately, providing us with only too much material upon which to form such opinions, and in the meantime, until great masses of statistics are available, as many cases as possible may be placed on record to help in this direction.

The Present Investigation.

For some months now I have been endeavouring, at the suggestion of Lieutenant-Colonel T. R. Elliott, to collect notes of patients in the Canadian hospitals in England, who have undoubtedly got foreign bodies in the chest, as shown by X ray examinations, and, although the list is still a small one, I give it as an early contribution to the subject. A large number of cases have been seen in the hospitals who have not yet been finally disposed of, but these are not included, as it is the final fate of such cases that we wish to ascertain.

In each of the cases in the list the X ray findings are given, and it will be seen that I include all cases in which the foreign body lies deeper than the ribs, so that in some instances these are not in the lung at all, but it seemed wise to include them in the series.

It will be observed that there were only two deaths in the list, and it is interesting to note that these two patients had been operated upon for the late removal of the retained foreign body. In one of them (No. 9) an abscess had formed round the offending missile, so that in this case an operation was urgently required, but in the other instance (No. 13) the patient was apparently well, and it would probably have been wiser, as the sequel showed, if he had been left alone. In a paper in THE LANCET of Sept. 8th last, by Colonel Elliott, there is a list of 170 cases of gunshot wounds of the chest, in which the after-history had been traced, and the only case that had a fatal issue in England was one in which there had been an operation for the removal of a rifle bullet from the lung. In 51 of his cases a foreign body remained in the chest, and Colonel Elliott does not think that this increased the gravity of the prognosis in any instance.

As regards the disposal of our 50 patients, 12 have been invalided to Canada or Australia or have been discharged as permanently unfit. One was tuberculous. Two died (as already mentioned, after operation). Three were categorised as "C 3" or "permanent base duty," 4 went to "light duty," and the remaining 29 were sent to full duty, "A 3," or "Command Depôt," where they would soon be considered fit to return to their units. Thus out of the 50, 36—i.e., 72 per cent.—were fit for some military duty, and only 14 were lost to the Army. The different ways of disposing of the patients is due to the fact that some were imperial men, while the rest were from overseas.

There must now be an immense number of these cases back at the Front and on other military duty, and yet how seldom is it that they are again invalided on account of disability resulting from the late effects of the retained foreign bodies. During my work in the past year in Canadian hospitals in England, and again in such work in France for nearly two years, I do not remember having come across such a case, and my colleague, Colonel F. G. Finley, tells me that his experience has been the same over a similar period.

Nearly all soldiers who have been shot in the chest, and in whom the missiles are still retained, complain of some cough and shortness of breath and of some pain in the chest, but I cannot say that they complain any more than do those in whom the missile has passed through and through. Further, in the former case most men have unfortunately been told that the foreign body is still in the chest, and have even been shown the X ray plates, and the knowledge so acquired is bound to make them introspective and thus will retard their complete recovery.

The Question of Operation.

The question of the early removal of large pieces of, in all probability, septic foreign material is not one that can be discussed now, but I note with entire approval that Colonel Elliott thinks that such large pieces of shell and shrapnel casing in the lung should be disposed of at once, as they will almost certainly produce gross infection, with frequent severe hæmorrhage, if left alone; but with this exception it would seem well to be very chary about removing small foreign bodies, especially rifle bullets and shrapnel balls. These do not seem to do any harm if left alone, and in no way increase the gravity of the symptoms produced by other associated conditions, such as hæmothorax, pneumothorax, and actual lung lesions.

Colonel Elliott states that it would appear from recent French publications that the mortality is much higher in chest wounds than was at first supposed, and that this high mortality requires vigorous efforts on the part of the surgeons to save life. "Also, in respect of casualties who survive these wounds, evidence is brought forward to show that retained projectiles, and especially shell fragments, almost always cause trouble, either by the introduction of sepsis, or, if sterile, by the introduction of later pathological changes or symptoms that incapacitate the patient for service."

Hence it has been urged by several surgeons that all shell fragments, other than those of small size, should be removed within the first 24 hours, with a cleansing of the wound track, suture of the lung, and evacuation of blood-clot from the pleural cavity. With this rule there will probably not be much difference of opinion. But the same authors go on to advocate "the removal from the thorax of all other retained foreign bodies at a much later date when the possibility of septic complications has passed away." In my humble opinion no such routine operation is called for. There are exceptions, of course, as where such a foreign body is giving rise to active trouble. Thus, in Case 6 in our series the patient had a resection done for an empyema and a permanent sinus remained, which eventually was found to lead directly to a piece of shrapnel which lay in the lung surrounded by fibrosis. This was removed and all the acute symptoms disappeared and the sinus closed, and the patient was well on his way to recovery before he left for Canada.

Even if it should occur that these foreign bodies do commonly at a much later date produce distress, probably it would then be less risky to remove them than to do so earlier merely in anticipation of such possible trouble.

No.	Age	X ray.	Weeks before final disposal	Disposal.
1	—	Shows bullet (shrapnel) left chest at level of spine of scapula; many fragments also here.	25	C 3.
2	—	Shows pieces of shrapnel all over left side of chest.	—	Com. depôt.
3	—	Shows piece of shrapnel between 4th and 5th ribs rt. side. Piece of shrapnel upper 3rd right lung.	—	A 3.
4	—	Shows large piece shrapnel intrathoracic just on left diaphragm. Moves with respiration.	—	Com. depôt.
5	—	Shows shrapnel bullet in region of junction 11th and 12th rib and vertebra.	—	Duty.
6	22	2 pieces shrapnel, 1 large, 1 small, intrathoracic, left side, large piece just internal to 7th rib 9 cm. from vertebral border. Opacity left lower lobe. Fracture 9th rib.	—	Invalided to Canada.
7	27	Bullet lying intrathoracic left side just posterior to 5th interspace on diaphragm, point toward back. Marked opacity left base. Movement of diaphragm restricted.	—	Duty.
8	34	Shrapnel ball, intrathoracic, left side, lying on diaphragm, 5 cm. in from apex of heart. Marked opacity in rt. lung. Diaphragm higher than normal, with adhesions to lateral chest wall.	—	Com. depôt.
9	—	F.B. 4½ in. from spine at the same level, with a large abscess around it. Oct. 17th, chest opened and abscess drained. Small piece of bone removed from lung. Oct. 28th, patient died of hæmoptysis.	—	Died.
10	—	Shrapnel bullet left chest just opposite heart. No lung changes July 27th, 1917, D. 1.	11	D 1. Com. depôt.
11	—	Injury to rt. clavicle 2 in. from external end, some necrosis occurring. F.B. in lung.	16	D 1. Com. depôt.
12	—	F.B. in chest opposite 1st interspace, close to sternum. 11 cm. from back.	—	D 1. Com. depôt.
13	—	Rifle bullet in lung. Operated on. Died suddenly on 3rd day, apparently from pulmonary thrombosis.	—	Died.
14	18	Several small fragments of shell in right lung. Large hæmothorax, relieved by oxygen replacement.	20	Duty.
15	29	Shows large piece shrapnel intrathoracic, rt. side, level 3rd rib, 7 cm. right of mid. line. Marked infiltration rt. upper lobes and cavity here. *Tubercular bacilli in sputum.*	2	Invalided to Canada.
16	27	Shows small piece shrapnel lying 1·5 cm. internal to 10th rib, mid-axillary line, rt. side. 2 small pieces just external to 9th rib, 2 cm. from vertebral border, lt. side. 1 small piece just internal to 8th rib, 2 cm. from vertebral border, rt. side.	15	Com. depôt.
17	31	Shows shrapnel ball intrathoracic 2 cm. in front of the 6th interspace, just to right of spine; no lung involvement.	9	Light duty.
18	39	Shows shrapnel ball intrathoracic lying 2 cm anterior to 8th interspace near spinal column, lt. side. Multiple fine shrapnel at site of fracture of 8th rib.	15	Invalided to Canada.
19	24	Shows medium-sized piece shrapnel intrathoracic just above diaphragm near apex of heart, about 4 cm. anterior to 10th rib posteriorly. Old fracture 8th and 9th ribs.	15	Permanent base duty.
20	29	Shows large piece shrapnel near diaphragm opposite 10th vertebra, left side.	70	Invalided to Canada.
21	23	Shows large piece and several small pieces shrapnel intrathoracic, left side, posterior, level 6th rib, moves with respiration. Also large and multiple shrapnel intrathoracic rt. side posterior level of 4th rib.	31	Light duty.
22	20	Shows medium sized piece shrapnel between 9th and 10th ribs, 2 cm. to left of spinal column.	33	,,
23	23	Shows F.B. in diaphragm in front of 10th dorsal vertebra, near rt. border, just below heart.	54	,,
24	19	Shows large piece shrapnel just internal to 5th interspace, nipple line, rt. side.	13	Com. depôt.
25	32	Shows shrapnel ball intrathoracic left side, 6 cm. deep, level of 10th intercostal space. 3 cm. from vertebral margin. Fibrosis and opacity here.	13	Invalided to Canada.
26	18	Shows large piece shrapnel intrathoracic left side, 3 cm. from mid-axillary line, level 7th rib posteriorly.	30	,,
27	32	Shows medium-sized piece shrapnel intrathoracic close to articulation of 7th right rib.	42	Canada.
28	—	Shows piece of shrapnel between 5th and 6th ribs on left side, 3 in. from sternum. Developed empyema. Chest opened and drained.	—	Duty.
29	—	Shows F.B. 1 cm. by ¾ cm. lying in rt. chest 2½ in. from spine and 4·3 in. from sternum.	—	,,
30	—	Shows shrapnel ball just inside left lateral chest.	—	,,
31	—	Shows shrapnel at level of angle of scapula. Pleura drained.	—	,,
32	—	Shows small piece shrapnel over 9th rib. Wound enlarged and rt. chest drained. F.B not removed.	12	Invalided to Australia.
33	—	Shows rifle bullet rt. chest at junction of 11th rib and vertebra.	—	Duty.
34	—	Shows F.B. left side behind lower end of sternum.	25	,,
35	—	Empyema developed. Chest opened and drained. X ray shows F B in chest opposite 7th dorsal vertebra.	30	Invalided to Canada.
36	—	Shows bullet in centre of lower half of left chest with fibrosis around it.	11	C 3.
37	—	Shows F.B. ¾ in. × ½ in. right chest 4¼ in. from ant. chest wall. No hæmothorax. Paralysed arm from injury.	15	Canada.
38	—	Shows bit of explosive bullet ¾ in. × ½ in. in right lung behind 3rd rib.	16	Com. depôt.
39	—	Shows piece of shrapnel ¾ in. × ½ in. in right chest behind 2nd rib. Wound of entrance over middle of rt. scapula.	17	,,
40	—	Foreign body present.	29	,,
41	—	,, ,,	8	,,
42	—	,, ,,	9	,,
43	—	,, ,,	11	,,
44	—	,, ,,	8	,,
45	—	,, ,,	9	Invalided perm. unfit.
46	—	,, ,,	16	Com. depôt.
47	—	,, ,,	8	,,
48	—	,, ,,	12	,,
49	—	,, ,,	52	,,
50	38	Several small pieces of shell in rt. lung, empyema and resection.	18	Invalided to Canada.

Conclusions.

1. Evidence is lacking that small fragments of shell and shrapnel and likewise rifle bullets and shrapnel balls retained in the lung commonly give rise to any serious trouble.

2. The mortality of gunshot wounds of the chest in patients that have survived the early days of their invalidism and been sent to England with retained missiles in the chest is practically nil if these foreign bodies be left alone.

3. Hence, when it has not been considered necessary by the surgeons at the Front to operate immediately, it should not later on be done, unless, indeed, some very definite indication, such as an abscess, exists.

ABNORMAL MEDIAN AND ULNAR NERVE-SUPPLY IN THE HAND.

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DURING the last six months I have met with four cases of abnormal nerve-supply to the hand, two of the sensory distribution and two motor. In two cases the first and second dorsal interossei were quite unaffected in severe ulnar nerve lesions from gunshot wounds, indicating their supply to be from the median nerve in these cases, while the other two cases illustrated an abnormally large sensory supply by the ulnar to the inner two and a half fingers instead of the usual one and a half.

In one of these latter, Captain J. A., aged 34, a case of median-nerve injury from a shell wound in the upper arm, in which the brachial artery was also severely injured, there was the usual wasting of the flexors and of the thenar eminence, with reaction of degeneration of these muscles, but the anæsthesia was limited to the palmar surface of the thumb, the index, and the outer half of the middle finger, both on palmar and dorsal aspects, no trace of anæsthesia being present on the inner half of the middle finger, though the injury was sufficiently severe to abolish sensation completely to prick and to firm pressure on the two distal

phalanges of the index and on the palmar surface of the thumb. It is, of course, well known that the ulnar nerve sometimes supplies sensation to the dorsum of the inner *side of* the proximal phalanx of the middle finger, but in the case here described the ulnar supply was much larger, a whole finger more than usual.

The complement to this case I have seen recently in a youth of 22, a private, with a severe injury of the ulnar nerve from a shrapnel wound through the inner side of the upper forearm. There was complete wasting of all the interossei and hypothenar muscles, though the flexor carpi ulnaris had escaped. There was total anæsthesia to pin-prick and even to the hardest squeeze on the whole of the little and ring fingers and inner side of the hand, and dense anæsthesia also to pin-prick and to moderate pressure over the inner half of the middle finger, both on palmar and dorsal aspects, only hard pressure being perceived in some spots, though sensation was quite normal on the outer side of the middle finger (see figure). Indeed, this anæsthesia of the inner half of the middle finger was much more dense than is usually met with over the inner half of the ring finger in total lesions of the ulnar nerve, in which pin-prick is usually perceived at once as pressure over this half of the finger.

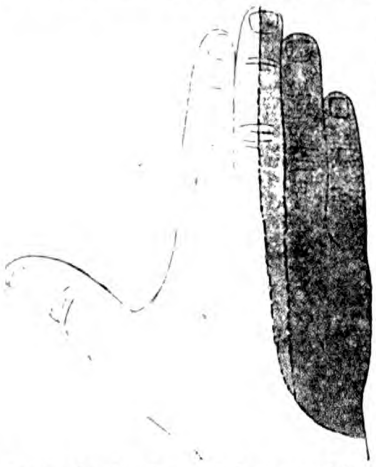


Diagram showing abnormally large area of ulnar anæsthesia on the dorsum of the hand: total to all forms on little and ring fingers and nearly complete, even to pressure, on inner half of middle finger.

Both these cases point to a larger area of ulnar nerve sensory supply at the expense of the median. These two cases are, of course, open to the criticism that in the first case the sensory nerve fibres supplying the third digital cleft may have been uninjured, and that in the second case these particular fibres of the median may have been damaged in addition to the ulnar nerve. That this was most unlikely in the second case is proved by the complete escape of the remainder of the median supply, both sensory and motor, which were normal to all tests. Moreover, the probability of the sensory supply of these two nerves being abnormal in these two cases is increased considerably by the fact that I have been able to prove in another case by operation that total division of the ulnar nerve in no way affected the first or second dorsal interossei muscles, thus showing incontestably an abnormally small motor distribution of the ulnar nerve in the hand.

In two patients I have seen complete escape of the first and second dorsal interossei in severe lesions of the ulnar nerve, the third and fourth dorsal interossei being paralysed with the hypothenar muscles and showing complete reaction of degeneration to electrical testing. The sensory paralysis in these two cases was of the usual distribution.

In one of them, Private N., an Australian, aged 23, the nerve was operated upon and found to be very much damaged, one inch of the nerve being then excised and the nerve sutured. When I was able to examine him again 11 days later there was still perfect voluntary movement of the first and second dorsal interossei, as he could abduct easily the index and middle fingers, though he could not move the middle finger towards the ring finger beyond the middle line. There was no sign of wasting of the two outer dorsal interossei, and both reacted briskly to faradism, just as they did before the operation upon the nerve.

Oppenheimer[1] mentions a case of ulnar paralysis in which all the interossei and lumbricals escaped, and Goldmann[2] describes a case of section of the ulnar nerve in which there was no motor disorder whatever. I have, however, met with no record of a case in which the dorsal interossei, like the lumbricals, were divided equally between the median and ulnar nerves, and I have therefore thought it advisable to record these cases.

[1] Oppenheimer: Text-book of Nervous Diseases. Trans. by Alex. Bruce. 1911, i., 455. [2] Goldmann: Beitr. z. kl. Chir., li.

CEREBRO-SPINAL FEVER: THE MODE OF INVASION BY THE MENINGOCOCCUS.

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IT is now generally accepted that the naso-pharynx is the portal of entry of the meningococcus in cases of cerebro-spinal fever. There is still, however, much difference of opinion as regards the exact mode of invasion of the meninges from this primary situation.

The possible routes of entry to the meninges are as follows:—1. Direct extension, *via* (*a*) middle ear; (*b*) sphenoidal sinus; (*c*) trans-ethmoidal route. 2. Indirect route, *via* the blood stream.

Direct Extension.

(*a*) *Middle ear.*—Infection occurring from the naso-pharynx by spreading down the Eustachian tube to the middle ear, and thence along the pia-arachnoidal sheath of the auditory nerve, has been suggested; this view, however, has no evidence in its support. Acute otitis media is most infrequent in cerebro-spinal fever, and, in the rare cases in which it does occur, always appears late in the disease. Recent otitis media was not present in upwards of 100 cases under our care, although four had chronic otitis media of very old standing.

(*b*) *Sphenoidal sinus.*—Investigations by Westenhoffer,[1] von Lingelsheim,[2] and E. Meyer suggested that infection might occur by direct extension from the naso-pharynx to the sphenoidal sinus; from here suppuration would readily extend through the thin lamina of bone above the sinus. Westenhoffer found that in 29 autopsies 34 per cent. showed some inflammation of the sphenoidal sinus; additional support for this hypothesis was thought to be forthcoming by the fact that in cases that died early in the disease the exudate was found localised in the base of the region of the hypophysis. A similar localisation, however, is observed in practically all forms of early meningitis—e.g., tuberculous meningitis and that secondary to middle-ear disease, &c. Flexner also showed that there was an identical localisation in the experimental meningitis induced in monkeys by the intra-spinal injection of meningococcus culture.

Westenhoffer's later observations led him to abandon his former view, as further researches failed to demonstrate the meningococcus in the sphenoid bone itself and showed that the exudate was confined to the superior and lateral aspects of the bone. Direct extension *via* the sphenoidal sinus has, more recently, again been advocated by Embleton and Peters,[3] who met with five cases of cerebro-spinal fever in which, on post-mortem examination, the sphenoidal mucous membrane was found injected and the sinus cavity filled with pus, together with osteitis of the surrounding bone. In two cases meningococci were demonstrated in the pus cells contained both in the sphenoidal sinus and the bone and in one the cancellous tissue also; the organism was not found in the other three. These authors also mention a recrudescent case of cerebro-spinal fever in which the sphenoidal sinus was opened from the nose, a drachm of pus escaping, which on examination was found to contain meningococci.

Although such direct infection by the meningococcus may possibly occur in very rare instances, just as in pneumococcal or streptococcal meningitis secondary to foci in the nasal fossæ, it is certainly not the usual mode of meningeal infection in cerebro-spinal fever. Further, in view of Westenhoffer's later observations, one has to bear in mind the possibility of such sphenoidal conditions being secondary to the meningitis rather than occupying a causal relationship to it. In 25 autopsies we found no evidence to support this view of infection *via* the sphenoidal sinus.

(*c*) *Trans-ethmoidal route.*—By experimental injections of methylene blue and Chinese ink in the dog and rabbit, André[4] demonstrated downward prolongations of the sub-arachnoid space, which form a network round the olfactory filaments as they pass through the cribriform plate. Other prolongations also pass, though quite independently of the

olfactory nerves, and, further, after injection, the mucous membrane of the nose was coloured as far downwards as the level of the superior turbinate bone. He concluded, therefore, that by means of these prolongations a direct communication exists between the subarachnoid space and the lymphatics of the upper portion of the nose. The direction of the current, however, demonstrated by these injections is from the subarachnoid space to the nasal lymphatics; meningococci similarly injected in monkeys found their way into the naso-pharynx.

As a result of the above observations, Netter and Debré [5] favoured the view that in cases of cerebro-spinal fever direct infection occurred from the naso-pharynx through the subarachnoid prolongations. It was necessary, however, to imagine, in cerebro-spinal fever, a reversal of the direction of the current—that is, from the naso-pharynx to the subarachnoid space, instead of *vice versa*. Of this no definite proof exists, experimental or pathological; infection of the meninges in monkeys has not been provoked by inoculation of meningococci into the naso-pharynx, although it is not without interest in this connexion to note that Flexner produced poliomyelitis in monkeys by the intra-nasal injection of the virus. Westenhoffer in his fatal cases found no evidence of extension along the lymphatics about the carotid artery nor along the nerve sheaths.

This view, therefore, although not without attraction, is somewhat conjectural and lacks proof; clinical observations, moreover, as we shall mention later, do not lend it much support.

Infection via *the Blood Stream.*

According to this view the meningococcus is absorbed from the naso-pharynx and carried by the blood to its site of election—the pia-arachnoid. The fact of obtaining cultures of meningococci from the blood of cerebro-spinal fever patients, once definite meningeal inflammation has begun, is not, of course, evidence that infection has taken place *via* the blood stream; such coccæmia might well have developed secondarily to the meningitis by the escape of the organisms into the circulation from the pia-arachnoid space, as occurs at the height of meningitis induced in monkeys by the intrathecal injection of meningococci. A similar possibility applies to the indirect evidence of the presence of cocci in the blood stream, afforded by the appearance of lesions distant from the central nervous system—e.g., arthropathies.

The most significant evidence lies in the occurrence of cases of cerebro-spinal fever in which the meningococcus can be isolated from the blood at a time prior to the invasion of the meninges, when meningitis can be proved, by examination of the cerebro-spinal fluid, to be non-existent. It would appear that, in the vast majority of cases, the meningococcus on reaching the blood stream from the naso-pharynx is quickly carried to the meninges (in from a few to 48 hours), constituting at this stage a coccæmia or temporary presence of meningococci in the circulation, whilst being carried to their destination, rather than a definite septicæmia in which the organisms are multiplying in the blood stream. Some recent experiments by Cresswell Shearer and Warren Crowe [6] suggest that conveyance of the meningococcus from the naso-pharynx to the meninges may be performed by the leucocytes. These observers, using freshly drawn spinal fluid from cerebro-spinal fever patients, in which the leucocytes had been shown to be alive by trypan-blue staining and observation on the warm stage, obtained good evidence that the meningococci could be taken up by human leucocytes in large numbers and retained by them for some considerable time without undergoing digestion; they could be recovered from these leucocytes up to 48 and even 60 hours afterwards.

It is true that experimental blood inoculation in animals has failed to produce meningitis, but the explanation of this failure may lie in the fact that all laboratory animals, as regards specific lesions, are relatively insusceptible to the meningococcus; in monkeys even, Flexner had to inject meningococci directly into the subarachnoid space in order to induce meningitis.

In some cases of cerebro-spinal fever the organism may infect the blood, causing a true septicæmia, and in rare instances remain confined to the blood stream for a considerable time before the meninges become involved. If the meningococcus were not primarily absorbed into the circulation it is difficult to understand how this could possibly occur. The following case, which recently came under our care, illustrates the meningococcus definitely established in the blood stream prior to infecting the meninges.

Meningococcal Septicæmia preceding the Meningitis.

CASE 1.—The patient, a man aged 26, was admitted to hospital in a collapsed state. He had felt quite well during the previous day, but in the evening complained of headache. That night he slept very little, and next morning had several shivering attacks vomiting about mid-day. On admission to hospital during the afternoon he was very pale; the temperature was 103·8° F. and the pulse feeble, the rate being 120 per minute. Beyond this there were no physical signs.

Early next morning the patient was seen to be more collapsed and a *hæmorrhagic rash*, consisting of many petechiæ and several large purpuric spots and even patches (vibices), was found to have appeared. The vibices were most numerous on and around the hips, but were also present on the arms and legs (extensor aspects), abdomen, and a few on the face. The temperature was subnormal (96·8°) and the pulse too feeble to count. His mental condition was normal, the sphincters were unaffected, the neck was perfectly supple, and Kernig's sign was definitely negative. He had now ceased to complain of headache. Lumbar puncture revealed a perfectly clear cerebro-spinal fluid; no increase was found in the cellular constituents and no organisms either on direct examination of the centrifugalised deposit or in culture. His appearance strongly suggested that of a fulminating case of cerebro-spinal fever, in spite of the normal consciousness and complete absence of all signs of meningitis. Consequently 30 c.c. of antimeningococcic serum were given intramuscularly and, to keep the blood pressure as high as possible, rectal saline (six-hourly) and digitalin (gr. 1/100, four-hourly) were also administered.

A blood culture taken at this time yielded a Gram-negative diplococcus, showing the cultural and fermentative characteristics of the meningococcus and, further, agglutinating by Gordon's type 2 univalent serum. A leucocyte count, performed the same morning, showed 38,400 white cells per c.mm. of blood. Blood films, taken from the ear and from a purpuric patch, did not show any characteristic diplococci. Naso pharyngeal swab yielded a meningococcus agglutinated by the same serum as that from the blood (type 2, Gordon).

Meningitis.—By the evening of the same day the patient's general condition had somewhat improved; the pulse was stronger, the rate now being 88 per minute, and the temperature had risen to normal. There was now some slight rigidity of the posterior cervical muscles, and Kernig's sign appeared just positive; the mental condition and sphincters, however, remained normal. Lumbar puncture now yielded 45 c.c. of slightly turbid fluid, which on microscopical examination showed polymorphonuclear cells and a moderate number of lymphocytes; several pairs of Gram-negative diplococci were also present, both intra- and extra-cellularly. He was given 30 c.c. of antimeningococcic serum intrathecally.

On the following day the patient's general condition had still further improved, although neck rigidity and Kernig's sign were more marked. The cerebro-spinal fluid, though still remaining turbid and with the same cytological characteristics, showed no Gram-negative diplococci. The leucocytes had fallen to 24,000 per c.mm. Serum was administered intrathecally daily until the fifth day of illness, lumbar puncture being continued until the sixth day, when the cerebro-spinal fluid was quite clear and showed no abnormal increase in the number of cells.

It would appear that the above case, in the usual course of events, should have been of a "fulminating" type, but the patient came under observation very early in the disease and, also, the septicæmic stage was somewhat prolonged, thus enabling therapeutic measures to be taken prior to the involvement of the meninges. From the preceding remarks, it follows that fulminating types probably result from a severe blood infection. Blood cultures, therefore, should be positive, and this is often found to be the case. Some observers, indeed, have seen Gram-negative diplococci in blood-films from patients exhibiting a purpuric eruption. A. C. Coles [7] figures such films taken from the ear of a patient with a purpuric rash who died within 50 hours of the onset of the disease. In these cases the meningitis, as shown by post-mortem examination, is often comparatively slight.

Other examples of meningococcal infection occasionally occur in which the meningococcus remains confined to the blood stream and never settles in the meninges. Such cases are admittedly rare.

In 1906 Andrewes reported a case with a purpuric eruption which yielded meningococci upon blood culture. The patient died in a few days without developing meningitis, evidence of which was also absent at the post-mortem examination. More recently Pybus [8] has recorded the case of a girl, aged 3 years, exhibiting petechiæ and some small hæmorrhagic patches on the lower extremities, who died within 12 hours of an acute onset. Post-mortem cultures made from the heart blood yielded a pure growth of meningococci, but the brain and spinal cord presented no sign of meningitis.

It is possible, of course, that if the above patients had not succumbed to the intensity of the blood infection, the meninges might have become involved later. In a few septicæmic cases, however, structures other than the meninges may be involved, as, for instance, the endocardium.

The following case of meningococcal septicæmia with ulcerative endocarditis recently under our observation ran a

course of over six weeks' duration. No physical signs of *meningeal* infection were present at any stage of the disease, and also at the autopsy meningitis was found to be absent.

Meningococcal Septicæmia with Ulcerative Endocarditis.

CASE 2.—The patient, a man, aged 37, was received into hospital, the temperature being 104° F., with a provisional diagnosis of influenza. He was said to have had "rheumatic fever" when young, but to his knowledge had had no other illnesses. On admission, no definite physical signs were apparent, and after five days the temperature fell to normal, the patient being allowed up a day or two later. The pulse-rate at this time varied between 84 and 90 per minute; during the pyrexial period it had averaged 106. When he had been up about six days the patient was suddenly seized with rigors; the temperature rose to 100°, and from this time he complained of dyspnœa and frequent palpitation.

General course.—The pyrexia occupied six days before reaching its maximum (103·4°), having gradually risen from 100° by successively increasing evening rises, the morning remissions being 1–2° lower. From this point onwards the pyrexia was rather of a continued type, varying between 100° and 103·4° during the second week, but not falling below 101°, excepting on one occasion, during the course of the third, fourth, and fifth weeks; the morning temperature was usually about 1° lower than that in the evening. Throughout these periods, the patient complained of more or less constant dyspnœa, occasionally showing exacerbations in its severity. During the fourth and fifth weeks he was somewhat cyanosed, and the tongue was dry and tremulous. Towards the end of the sixth week his condition became increasingly grave and œdema of the lower extremities made its appearance. The temperature began to fall and did not rise above 99·4° during the four days preceding his death, which occurred after a course of six and a half weeks.

No rash or petechiæ ever appeared, nor was there any evidence of meningitis; both neck rigidity and Kernig's sign were absent throughout, and the mental condition, excepting when he sank into unconsciousness before death, was invariably normal.

Circulatory system.—Heart: During the first three weeks of the illness a "to-and-fro" murmur could be heard at the base of the heart in the aortic region, together with a very faint systolic murmur at the apex. The heart became moderately enlarged, the apex beat reaching just outside the nipple line in the fifth interspace. By the end of the fifth week, however, the enlargement was considerable; the apex extended in the sixth interspace fully 1½ inches beyond the nipple line. In the aortic area there was a marked double murmur, which varied in intensity from time to time; the apical systolic murmur also became more pronounced. During the last week of the course the cardiac sounds were indistinct and the murmurs occasionally inaudible.

Pulse: The pulse-rate did not reach above 90 per minute during the first week; up till the end of the third week its highest recorded rate was 104, the average for this period being about 100. Thereafter, however, it seldom fell below 112, and was frequently 136 especially during the fifth week. With the decline of the pyrexia, the pulse-rate also showed a tendency to fall, rising again, nevertheless, towards death.

Blood: A count of the white blood cells, midway through the second week, showed only 6200 per c.mm. At the same time the patient's serum failed to agglutinate paratyphoid A. B, or typhoid bacilli; a Wassermann reaction also was negative. Blood culture (10 c.c. of blood in both), however, yielded a Gram-negative diplococcus, showing the cultural characteristics and fermentative reactions of the meningococcus; it fermented glucose and maltose, but not saccharose. The organism, moreover, gave a positive agglutination reaction with Gordon's Type 2 univalent meningococcal serum, but not with that of the other three types.

Early in the fourth week the leucocytes had increased to 39,400 per c.mm. and, to confirm the previous findings, another blood culture was taken with the same result as before—the isolation of a Type 2 meningococcus.

Other viscera: At the beginning of the fourth week the spleen appeared to be tender, but although enlarged to percussion during the fifth week its edge was never definitely palpable. The liver was found to be enlarged as early as the third week, the lower edge extending about 1–1½ in. below the costal margin. The lungs always appeared clear, but a scanty mucoid expectoration occurred throughout. The urine, whenever examined, contained a trace of albumin.

Autopsy.—Brain: Pale and anæmic, but otherwise normal. No meningitis.

Heart: The heart was large and soft, being 18½ oz. in weight. The tissue muscle generally, and particularly that of the ventricles, showed well-marked myocarditis (musculature mottled, small pale areas alternating with congested areas, and the muscle fibres showing a tendency to fall apart). The acute and widespread nature of the myocarditis was confirmed later on microscopical examination of prepared sections. On the surface of the heart there was considerable thickening of the epicardium ("milk-spots"), covering the greater part of the posterior aspect of the right ventricle, the whole of the right auricle, and on the left ventricle, chiefly following the course of the vessels. The right auricle and all the ventricles were markedly dilated, but the capacity of the left cavity was only slightly increased; both the right auricle and the right ventricle showed considerable hypertrophy, and the left ventricle to a moderate amount. The coronary arteries, pulmonary artery and valves appeared normal; the tricuspid valve was healthy, but the orifice slightly dilated. The mitral orifice was also dilated, admitting the fingers, while the valves were free and normal, excepting at the same base of the anterior cusp, the appearance of which is described below.

The **aortic valve** showed ulcerative endocarditis affecting the left anterior cusp only, the other cusps appearing normal. A portion of the left half only of the left posterior cusp was involved; the free edge was quite unaffected, but below this, between the edge and the base, was a large perforation, more or less circular in shape, and about ⅜ inch in diameter. The lower edge of the opening reached to the base of the cusp, the margins were ulcerated, and projecting from it into the ventricle was a massive fibrinous and fairly tough vegetation; its under structure was about ¼ inch thick and projected a distance of ½ inch from the cusp. Sections prepared from this vegetation, including the piece of aortic cusp to which it was attached, showed large numbers of cocci having the morphological appearance and staining reactions of the meningococcus. Other vegetations apparent at the edge of the perforation encroached to a slight extent on the base of the anterior mitral cusp where it and the aortic cusp meet.

Aorta: A small circular aneurysm, ¼ inch in diameter, was seen immediately above the perforation in the cusp; it perforated the inner and middle layers of the aorta, its base being formed by the external coat. A few fatty streaks were found in the tunica intima, but no atheroma or evidence of syphilis.

Lungs: The right lung showed old pleural adhesions of the outer and posterior surfaces of the upper lobe and also of the posterior surface of the lower lobe in its upper portion. There were no adhesions on the left side nor to the diaphragm. A certain amount of chronic bronchitis and emphysema was also apparent.

Liver: Much enlarged, the weight being 90½ ounces; there was nothing visible to the naked eye.

Spleen: Also enlarged (weight 18 ounces); it showed old adhesions: the pulp was soft and friable, and a few recent infarcts were present.

Kidneys: Both enlarged generally, but no other apparent change.

R. L. Cecil and W. B. Soper,[10] in 1911, reported a somewhat similar case of primary meningococcal endocarditis, proved by blood culture and autopsy, who died on the tenth day of illness without developing meningitis. Some doubt has been thrown upon Cecil and Soper's case by later writers on the ground of the difficulty in distinguishing the meningococcus from the gonococcus in blood cultures. We consider, however, that the case described above confirms their report.

Further evidence of infection *via* the blood stream is afforded by clinical observations gained by a study of the onset of the disease in different cases. The onset, although sometimes preceded by a variable period of slight malaise, is usually somewhat sudden, in contrast, as pointed out by Elser and Huntoon, to that form of meningitis secondary to otitis media, in which infection of the meninges occurs by direct extension. In the majority of cases of cerebro-spinal fever initial rigors are present, frequent chills, and, finally, vomiting. Cases coming under observation at this stage may reveal a perfectly clear cerebro-spinal fluid, showing no increase in the cellular constituents and devoid even of diplococci.

Dopter originally conceived cerebro-spinal fever as a disease falling into three definite stages: (1) catarrhal; (2) septicæmic; and (3) meningeal. This view was also, in 1915, advocated by Lundie, Thomas, and Fleming[11] in England, and later by Fairley and Stewart[12] in Australia. They regarded the catarrhal stage as the most prevalent form of the disease, the meningeal stage being reached in a comparatively small percentage of cases. As Horder[13] remarks, this view comprises the whole series of pathogenic events open to the meningococcus rather than connotes the disease process to which it more often gives rise. In man, for whom the meningococcus is definitely pathogenic, there is overwhelming evidence that the meninges are preeminently the site of election for this organism.

Lundie, Thomas, and Fleming categorically stated that all their carriers had naso-pharyngeal catarrh, but the fact of such catarrh being present in all carriers has not been borne out by other observers. The greater number of carriers that we have dealt with during the past two years have shown no naso-pharyngeal catarrh, and in the remainder evidence that it was due to the meningococcus was very indefinite. In some, indeed, it may be accounted for by the presence of adenoids, which, as Foster and Gaskell[14] point out, is by no means an uncommon concomitant of the carrier state.

Westenhoffer and von Lingelsheim considered that a meningococcal pharyngitis occurred before the supervention of meningitis. It is true that some cases show a varying degree of pharyngitis or other catarrhal condition; a fair percentage, also, complain of catarrhal symptoms, such as "sore throat," "cold" or cough, preceding the onset of cerebro-spinal fever. Many cases, however, have no catarrh. Nevertheless, it is probable that naso-pharyngitis and other catarrhal conditions predispose to the entry of the meningococcus rather than result from its presence in the respiratory tract. The occurrence of cerebro-spinal fever during convalescence from such catarrhal states as influenza and measles further supports this view.

It was possible to obtain a detailed history of the onset in 62 of our cases; in 25 (40 per cent.) the attack of cerebro-spinal fever was immediately preceded by some catarrhal condition. It consisted of a complaint of "sore throat" in 11 patients of the 25; in five of these the "sore throat" was accompanied by a "cold" and in three a cough. The duration of such symptoms was from 3 to 12 days. 12 patients complained of a "cold" prior to the onset of cerebro-spinal fever, the period varying from three days to

three weeks, and, finally, a cough had been present in two patients for three weeks preceding the illness. One patient developed cerebro-spinal fever within four days of his recovery from a mild attack of influenza and another during convalescence from measles.

Conclusions.

1. The mode of entry of the meningococcus is *via* the blood stream.

2. In the ordinary type of case the coccus is carried to the meninges by the blood within a few hours without definitely infecting the blood itself.

3. In some cases, however, blood infection (septicæmia) occurs—e.g., in fulminating cases prior to the involvement of the meninges; the septicæmia then frequently overshadows the meningitis.

4. In rare cases the organism may remain infecting the blood alone for a considerable time, before finally reaching the meninges, or the patient may die of such septicæmia before meningitis can occur.

5. In other instances the meningococcus infecting the blood may also invade structures other than the meninges—e.g., the cardiac valves.

6. Catarrhal conditions predispose to meningococcal infection, but the meningococcus does not necessarily produce naso-pharyngeal catarrh.

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ON THE ACTION OF SPINAL FLUID IN STIMULATING THE GROWTH OF THE MENINGOCOCCUS.

BY CRESSWELL SHEARER, M.D., F.R.S.,
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IN a former paper[1] I have shown that the growth of the meningococcus on an artificial culture medium is considerably increased in the presence of an aqueous or an alcoholic extract of dilute nasal secretion, this secretion, like blood, acting as an accessory food-body in stimulating bacterial growth. The power which the meningococcus possesses of invading the cavities and membranes of the brain and spinal cord renders it important to determine if brain tissue extracts or normal human spinal fluid exercise any similar action on the growth of this germ.

The following experiments have been devised with the object of testing this point. The ones dealing with the action of spinal fluid have been repeated many times.

EXPERIMENT 1.—*To determine the action of small pieces of brain tissue and spinal cord membranes in stimulating the growth of the meningococcus when added in a sterile and thoroughly washed condition to various media.*—(*a*) To the surface of a culture plate of sterile silica jelly a thin emulsion of human spinal cord and brain membranes was applied. This was prepared by washing the tissues first thoroughly in running distilled water and then grinding them up with sand and sterilising. No growth of the meningococcus could be obtained on these plates.

(*b*) The experiment was varied by adding the emulsion to a 2 per cent. agar solution, mixing, and rendering neutral to litmus paper and sloping it in test-tubes. No growth could be obtained on these tubes using freshly isolated strains of the meningococcus. Growth, however, took place when old laboratory strains were used.

(*c*) Small fragments of similarly prepared brain tissue and membranes were added to agar slopes and sterilised. No growth took place on these tubes when they were inoculated with freshly isolated strains of the meningococcus.

The conclusion drawn from these experiments is that if human spinal cord tissue, brain membranes or tissue are thoroughly washed to remove all traces of blood and serum, then these tissues in themselves possess no particular power of stimulating the growth of the meningococcus. The experiments as carried out as described above are inconclusive, as it is difficult to accurately adjust the reaction of these media.

EXPERIMENT 2.—*To determine the action of sterile human spinal fluid in stimulating the growth of the meningococcus when added in different proportions to various standard culture media.*—(*a*) To the surface of a culture dish of Crowe's chocolate medium, 25 c.mm. of an emulsion (of 4 million cocci to the c.c.) of a freshly isolated meningococcus strain in sterile human spinal fluid was added. A control emulsion of the same strain was made up of the same strength in sterile Ringer's solution. The growth on the plate containing the spinal fluid emulsion was many times greater than that obtained on the plate inoculated with the Ringer's solution after 48 hours' incubation at 37° C.

(*b*) To 10 c.c. of a 2 per cent. solution of agar in Cole and Onslow's[2] amino-acid broth 2 c.c. of sterile human spinal fluid was added, while to a control tube 10 c.c. of the same agar solution without the spinal fluid was made up. Both tubes were then inoculated with a similar quantity of a freshly isolated meningococcus strain. A large and thick growth took place on that tube which had received the spinal fluid, while little or no growth took place on the tube without it.

(*c*) To a tube of 10 c.c. legumen trypagar 2 c.c. of sterile human spinal fluid was added and the tube inoculated with a freshly isolated strain of the meningococcus. A control tube without spinal fluid was inoculated with a similar quantity of the same culture. A large amount of growth was obtained after 24 hours' incubation at 37° C. on the tube which had received the spinal fluid, while no growth had taken place on the tube without it.

The conclusion drawn from these experiments was that the growth of the meningococcus is greatly increased on various solid media in the presence of normal sterile human spinal fluid as compared with the growth of the same strains of the germ grown on these media in its absence.

EXPERIMENT 3.—*To determine the action of spinal fluid in stimulating the growth of the meningococcus, as compared with the action of fresh sterile blood and an aqueous extract of nasal secretion and an alcoholic extract of the same.*—To tubes A, B, C, D, and E 10 c.c. of Cole and Onslow's amino-acid broth was added. To tube B ten drops of normal sterile human spinal fluid was added. To tube C ten drops of sterile aqueous extract of nasal secretion was added. To tube D ten drops of a sterile alcoholic extract of nasal secretion was added. To tube E three drops of freshly drawn human blood was added. All the tubes were then sterilised for two hours in the steam steriliser. To each of the tubes was then added three drops of an (200 million cocci to the c.c.) emulsion of a freshly isolated strain of the meningococcus, a 24-hour culture being employed. The tubes were then incubated at 37° C. for 24 hours.

Result: A, no growth; B, large growth; C, small growth, D, little or no growth; E, large growth.

The conclusion drawn from this experiment was that both sterile human spinal fluid and blood increase the growth of the meningococcus in amino-acid broth, while this broth is alone unable to grow a freshly isolated strain of this germ. Spinal fluid in these experiments brought about a larger amount of growth in amino-acid broth than the same quantity of blood. An aqueous extract of nasal secretion produced slight growth, while an alcoholic extract brought about hardly any growth of the meningococcus in amino-acid broth.

EXPERIMENT 4.—*This experiment was in large part a repetition of the last one, the amino-acid broth in this instance being added to 10 c.c. plain agar and sterilised.*—Into three tubes, A, B, C, 10 c.c. of plain 2 per cent. agar solution was placed. In addition into tube A 2 c.c. Cole and Onslow's strong amino-acid broth was added. Into tube B 2 c.c. of boiled human spinal fluid was added in addition to 2 c.c. of amino-acid broth. Into tube C 2 c.c. of an aqueous extract of nasal secretion was added in addition to 2 c.c. amino-acid broth. The tubes were then sterilised by autoclaving for ten minutes at 120° C. They were then poured into sterile Petri dishes and allowed to set. To the surface of each dish 1 c.c. of an (200 million to the c.c.) emulsion of a 24-hour culture of a recently isolated meningococcus strain was added and spread over the surface. The plates were incubated for 24 hours at 37° C. No growth took place on plates A and C, but a thick growth appeared on plate D, this being the plate that had received the spinal fluid.

[1] THE LANCET, 1917, i., 59.

[2] Cole and Onslow: THE LANCET, 1916, ii., 9.

The conclusion drawn from this experiment is similar to that of the last in its main result; spinal fluid brings about a much larger growth of the meningococcus when it is present in a culture medium of agar and amino-acid broth than does nasal secretion extract.

General summary of the foregoing experiments.—The main outcome of the foregoing experiments is to show that there is present in normal spinal fluid some substance that greatly increases the rate of growth of the meningococcus on an artificial culture medium. They clearly demonstrate that this power, in the case of human spinal fluid, is relatively greater than that shown by blood or nasal secretion; that volume for volume spinal fluid brings about a much thicker growth of the meningococcus than do the same volumes of blood or nasal secretion.

In a recent paper Miss Jordan Lloyd[3] has drawn attention to the presence in widely different bodies as blood, serum, milk, and other animal and probably vegetable tissues, of certain accessory food factors which materially affect the rate of growth of the meningococcus on various media. It was to be expected therefore that a similar property would be possessed by the spinal fluid. The interest of the above experiments, however, lies not so much in the possession of this property, as in the fact that it is possessed in a relatively greater degree than either blood or nasal secretion, and that this fact may be of some importance in explaining the quick growth of the meningococcus in the cerebro-spinal fluid and its power of rapidly invading the membranes and cavities of the central nervous system.

In a recent paper I have shown[4] (in conjunction with Crowe) that human leucocytes are capable of taking up living meningococci and keeping them alive for considerable periods of time. We suggested that this might be the means by which this organism gains admission to the cerebro-spinal fluid and the meninges. In the light of the above experiments the rapid growth of the cocci would be ensured by the spinal fluid, once the organism had been introduced into it by the leucocytes. The present experiments with spinal fluid therefore afford some additional support of our original experiments as to the mode of infection in cerebro-spinal fever.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

REMOVAL OF SHRAPNEL FROM THE SUBCLAVIAN ARTERY.

By H. C. DONALD, M.B., C.M.GLASG., F.R.C.S. EDIN.,
MAJOR, R.A.M.C. (T.F.)

THE interesting features of this case are: 1. The emergency of the operation. 2. The difficulties experienced on account of the depth of the vessel at the high seat of ligature whilst at the same time the hole in the artery had to be plugged by the finger of the left hand of the operator to control the alarming hæmorrhage. 3. The ball-valve action of the fragment of shrapnel in the artery, which undoubtedly saved the patient's life.

No. P/822, Private H. S., 10th Prussian Infantry, prisoner of war, was admitted to hospital on April 26th, 1917, in a collapsed and blanched condition, with signs of severe hæmorrhage from a punctured wound about half an inch below and towards the centre of the right clavicle. The hæmorrhage had, however, ceased for the time being. The patient was treated on general lines and improved. There was also musculo-spiral paralysis of the right arm, fairly well marked, with drop-wrist. On the evening of the second day after admission a second and severe hæmorrhage occurred, and simultaneously a soft swelling developed under the clavicle. The patient was removed to the operating hut absolutely collapsed, pallid, with no pulse felt at right radial, and only a very feeble and rapid pulse at left.

Intravenous saline infusion was attempted while patient was being anæsthetised, but owing to the collapsed condition of the veins was impracticable, so subcutaneous was commenced. However, during the progress of the operation a vein was struck, and intravenous infusion was continued throughout. An incision was made parallel to, and half an inch below, the clavicle, and both pectorals were divided. A large blood clot, the size of a duck egg, was found. As this was cleared away an alarming fountain of blood burst forth. A finger was plunged deep into the wound which controlled the bleeding. It was found that there was a hole in the subclavian artery at about the juncture of the second and third part of the vessel. A piece of shrapnel about the size of a small haricot bean was felt inside of the artery and partially blocking the opening.

The course of the vessel was exposed under difficulty, as one hand was fully occupied in controlling the hæmorrhage, and a ligature was placed round the subclavian as high up as possible about the beginning of the second part. The piece of shrapnel was removed and the tear in the vessel clearly demonstrated. The pectorals were repaired and the wound stitched except at the outer end, which was drained.

The patient's condition was very grave, and remained so during the night. Saline infusion was kept up at intervals for the next 24 hours. With the exception of slight superficial suppuration of the wound the patient's recovery was rapid and uninterrupted. On the fifth day after the operation the radial pulse was perceptible and gradually increased in volume, and the musculo-spiral paralysis showed signs of improvement later.

The number of days from the time this man was wounded to the day of operation is not known, but as he was operated on at the base, where he arrived as a sitting case, it is probable that many days elapsed.

I am indebted to Lieutenant E. Wragg, R.A.M.C., for his assistance at the operation and for his care in the after-treatment of the case.

A CASE OF COMPLETE OBLITERATION OF THE ULNAR ARTERY BY SUPPURATION.

By JEHAN M. BARLET, M.D.,
MEDICAL OFFICER IN CHARGE, FRENCH HOSPITAL; AIDE MAJOR, ARMÉE FRANÇAISE.

THIS case is recorded to show the complete disappearance of the ulnar artery for a distance of 8 inches due to suppuration. The patient made a perfect recovery and has the use of his arm, which he can use to manipulate his crutches.

The patient, aged 24, was admitted to the French Hospital on April 30th, 1917, having been wounded six days before; he was suffering from a seemingly superficial flesh wound of the left forearm. He had also had his left femur amputated in the lower third. On admission his temperature was 101° F. and pulse 110.

On May 9th he had considerable swelling of the forearm, which was opened up and pus found in the deep layer of muscles; drainage-tubes were put in reaching from elbow to wrist. At midnight he had an attack of secondary hæmorrhage when the tubes were removed by the house surgeon. This was followed by two more attacks of secondary hæmorrhage at midday and 7 P.M., which were controlled by a tourniquet. At 9 P.M. on the 10th he had a further hæmorrhage, whereupon I had an anæsthetic administered and cut down upon the brachial artery, which was bleeding at the bend of the elbow, but being unable to tie it off a pair of Spencer Wells forceps was left on.

Two days afterwards it was decided to cut down and tie the ulnar artery, but upon opening up the forearm under $CHCl_3$ it was found that the ulnar artery for the greater part of its length had been destroyed by ulceration, and only the two ends were left, so ligatures were applied—one just below the bifurcation of the brachial artery and the other at the level of the pisiform bone. The arm was treated throughout by means of the Mencière solution.

I am indebted to Mr. W. H. Clayton-Greene, senior surgeon of the French Hospital, for permission to publish this case.

Bedford Court Mansions, W.C.

ROYAL VICTORIA HOSPITAL, BELFAST.—The clinical winter session at the Royal Victoria Hospital was opened with an address by Dr. W. Calwell, in which he referred to the fact that five of the full staff of the hospital were at the front, and that all the auxiliary staff were or have been serving. Including former and present members of the medical school, the following honours had been won: 1 V.C., 2 C.B.'s, 3 C.M.G.'s, 1 C.I.E., 4 D.S.O.'s, and 15 M.C.'s, while 21 persons were mentioned in despatches. In conveying a vote of thanks to Dr. Calwell, Sir John Byers, who presided, incidentally referred to the brilliant work done by an old student of the school, Major Robert McCarrison, as show in his book, "The Thyroid Gland in Health and Disease."

[3] Jordan Lloyd: Jour. Path. and Bact., 1916, xxi., 113.
[4] Shearer and Crowe: Proc. Royal Society, 1917, Ser. B, lxxxix., 422.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

Anæsthetics in Home Military Hospitals.

A MEETING of this section was held on Nov. 2nd, Mr. GEORGE ROWELL, the President, being in the chair.

Lieutenant-Colonel J. F. W. SILK, R.A.M.C., opened a discussion on Anæsthetics in Home Military Hospitals. He said that chloroform, pure and undiluted, was to be avoided when possible. The mortality was high even with skilled anæsthetists when using chloroform. He thought it was of value in many cases, especially when given diluted with ether and by the open method. For *short cases* three methods of anæsthesia were suitable: (1) local anæsthetics, perhaps not used as often as might have been expected before the war; (2) N_2O; and (3) ether, which should be given preferably by the open method. He thought that the preliminary injection of morphia and atropine should be almost a routine. Sometimes hyoscine was added to the mixture. If ether was to be administered atropine should always be given as it dries up the mucous secretion. As to the time of the injection he thought the orthodox hour before the operation was too much. He would give it half or even a quarter of an hour before, for choice, and it should be given in the anæsthetic room rather than not at all. He advised morphia ¼ gr., and atropine 1/100 gr. For the mask he preferred gauze to lint. When time was no object he thought ether should be used from the beginning, otherwise it was best to begin with a mixture of chloroform and ether. To hasten induction he often began with ethyl chloride dropped on an open mask, or used ether in a Clover. He liked McCardie's drop-bottle, as the amount could be easily regulated and the bottle was not easily broken. He now used a nasal tube passed back into the pharynx, which ensured a free air-way even if the jaw muscles became stiff, and the tube could not be occluded even if the epiglottis and tongue fell back. Most hospitals were provided with Clover inhalers, and he had suggested McCardie's proportion of one drachm of chloroform to each measure of the inhaler; he preferred the open method. Less chloroform and more ether had been given in home hospitals than in the past year with increased safety to the patients. With regard to anæsthetics in special cases, he thought that in *shock* too much morphia could not be given, but it should be avoided in septic cases, and in patients with malaria or heart trouble. In these cases chloroform should also be avoided. As little anæsthetic as possible should be given, and it should be diluted with oxygen, which could be bubbled through the ether. Nitrous oxide and oxygen were valuable, but the apparatus militated against its use, and he was not satisfied as to the anæsthesia which was produced. Warm ether was of advantage in these cases. Continuity and regularity were great points in success. In *intracranial* cases morphia was unnecessary, and here also very little anæsthetic should be given. He preferred chloroform as it lowered venous congestion. In *empyema* the mortality was severe. For these cases he preferred intratracheal methods and thought that the patients should be concentrated in the better equipped hospitals where this apparatus was used. Otherwise he preferred chloroform and oxygen. In *spinal cases* the patient had to lie on his face and the chest was consequently compressed, so that the anæsthetic had to be pumped into him, and venous congestion was always present. He thought chloroform and oxygen the most desirable method. In *orthopædic surgery* spinal anæsthesia was not used as much as one might have supposed would be the case. Nitrous oxide was often used and acted well when given with ether, but venous congestion should be avoided; warm ether produced this. In *plastic surgery* of the face and allied conditions the chief difficulties were caused by the blood and mucus which collected in the mouth and pharynx; there was also the difficulty of manipulating the anæsthetic with a fixed or very mobile jaw. In the majority of cases exceptional methods were necessary, and of these he mentioned four: 1. *Intratracheal.* This was not necessary in all or even in the majority. 2. *Intubation* was little known in this country, but had many advantages; it was easy to introduce Kuhn's tube, which could be packed with gauze round the pharynx, thus preventing blood from entering. 3. *Rectal ether-oil* method. In this there were two important points: (*a*) the patient should have morphia and atropine before; and (*b*) the anæsthetist should himself see that all remnants of ether-oil were washed out of the rectum. 4. *The sitting position.* In this the patient sat bolt upright and anæsthesia was produced by passing oxygen and chloroform or other vapour through a nasal tube. This method had been in use for over a year at one of the principal facial hospitals, and so far no fatality had occurred. The speaker asked for views as to the cause of ether bronchitis.

Mr. BELLAMY GARDNER said that in the nasal air tube a very important method of overcoming a difficulty had been evolved. Apart from the adoption of the mouth prop the only other suggestion was tracheotomy. He thought the mouth prop should always be used.

Dr. J. BLOMFIELD said that in plastic surgery he had been led to appreciate the intratracheal method.

Major H. D. GILLIES, R.A.M.C., said that, by Colonel Silk's advice, he had adopted the sitting position and also intratracheal methods. In plastic surgery an anæsthetist was needed who could give every known form of anæsthesia. It was often impossible to use the intratracheal method owing to the form of injury. The sitting position had the advantage that the tongue and jaw tended to fall forward. Nitrous oxide and oxygen had given good results. Each case had to be considered from the anæsthetic point of view. The intratracheal was the ideal method if it could be done. Kuhn's tube was a good substitute, but the large apparatus in the mouth was a disadvantage. Chloroform and oxygen given through the nasal tube, with the patient in the sitting position, had given good results.

Dr. F. E. SHIPWAY said that he always induced with chloroform and ether on the open mask and then continued with ether. He did not agree with Colonel Silk's opinion that too much morphia could not be given in cases of shock. Morphia was a depressant, reduced temperature, lowered blood pressure, and diminished excitability, thus producing a condition similar to shock. When shock had developed he thought that morphia should not be given in larger doses than 1/6 of a grain, or 1/4 grain at the outside. In empyema he preferred ether or warm ether. Light anæsthesia was very necessary. In facial cases he preferred intratracheal ether, and in only 6 per cent. was he unable to pass the catheter. The advantage to the patient was the absence of post-operative vomiting—a consideration when many operations had to be done. Sickness could not be avoided after chloroform in the sitting position. Ether-oil per rectum was occasionally a very valuable method, but he doubted if it were free from danger on account of irritation of the lower bowel. Mr. H. M. Page had suggested less ether, but Major Gillies found that less than the amount recommended by Gwathmey was not enough.

Captain H. EDMUND G. BOYLE, R.A.M.C., said that it was both wrong and dangerous to induce with chloroform; ether or a mixture of gas and ether should always be used. He did not agree that the apparatus militated against the gas and oxygen method. Speaking of plastic surgery, he said that he had anæsthetised 23 cases with ether-oil per rectum and had tried to change the dosage. He now used paraldehyde 1 drachm, olive oil 2 ounces, and ether 4 ounces. He had had no cases of irritation of rectum. He thought the mouth prop should always be used, and that the nasal tube was not needed.

Mr. PERCIVAL P. COLE said that very well-trained anæsthetists were necessary for plastic operations on the face. He thought it was rarely impossible to pass the tube. Kuhn's tube was not so good, as the operations usually lasted a long time, and the physical exhaustion produced on the patient by breathing through Kuhn's tube was marked. This did not occur with the intratracheal method. Vomiting was rare.

Colonel SILK said in reply that the ether-oil method required care. He had never had a case of rectal irritation. In shock he recommended a quarter to half a grain of morphia. He was pleased to find that the meeting was so thoroughly in accord with his condemnation of undiluted chloroform for routine use in military hospitals.

Dr. H. R. PHILLIPS demonstrated an apparatus for administering oxygen with ether and chloroform. The oxygen, contained in two cylinders, was passed through hot water contained in a copper tank, and thence through the chloroform or ether, or through both.

Reviews and Notices of Books.

The Cancer Problem: A Statistical Study. By C. E. GREEN, F.R.S.E. London: W. Green and Son, Limited. 1917. Pp. 140.

Cancer, its Cause and Treatment. By L. D. BULKLEY, A.M., M.D., Senior Physician to the New York Skin and Cancer Hospital. Vol. II. New York: Hoeber. Pp. 282. Price $1.50.

1. DISCARDING the conventional methods of death-rates per illion living favoured by the generality of statisticians, Ir. Green presents his figures in the form of one death from ancer in so many deaths from all causes, and perhaps to ow his contempt for the paper-economy campaign he ives the same data over again as deaths from cancer in 00 deaths from all causes. The product of the correspond-g figures in the two columns being 100, one or other is dundant. This arithmetical comedy occupies eight large arto pages devoted to England and Wales alone, and ver a word as to the year or years to which the figures fer. This probably accounts for our failure to find any mple arithmetical relation between Mr. Green's figures and ose of the Registrar-General.

2. Dr. L. D. Bulkley advocates very definite views in his ok on cancer, of which Volume II. is in our hands. e believes that cancer is a disease of disordered meta-lism set up by an unphysiological mode of life, and rticularly by dietetic errrors, causing constipation and perfect excretion of waste products. A strict vegetarian et (butter and eggs are allowed, but not milk), abstinence m alcohol and tobacco, with the administration of tassium salts, constitute the treatment he recommends. r this regimen he claims the cure of cancer without opera-n, the prevention of recurrence after operation, and a ong probability of prophylactic value if adopted before the ncer age. Dr. Bulkley's condemnation of the surgical atment of cancer is only slightly tempered by regard for surgical colleagues of the New York Skin and Cancer spital. Dr. Bulkley is unconvincing.

ientials of Medical Electricity. By E. R. MORTON, M.D., and E. P. CUMBERBATCH, M.A., M.B., B.Ch. Oxon. Third edition, revised and rewritten by Dr. CUMBERBATCH. With 11 plates and 72 illustrations. London and Glasgow: Henry Kimpton. Pp. 303. Price 6*s.* net.

THE present edition, the work of Dr. Cumberbatch, has n entirely rewritten "so as to include the new methods l at the same time present the subject in the light of the ver and clearer knowledge of the way in which electricity s in the cure or relief of disease." In Chapter I., mmencing with an account of the theory of ionisation, strations are given of the manner by which electrolytes y be produced within the body either at the entrance, the of the constant current, or along its path between the electrodes; also of the means by which new electrolytes y be introduced into the system from without. During its sage the current stimulates the nerve-endings of the sensory ves and the afferent end-organs within the muscle and . With an interrupted current of certain strength and ation the muscles themselves contract. In the high-quency current, where the frequency of reversal becomes remely high (one million or more per second), there is no scular contraction, no apparent stimulation of nerve, but is developed. The remainder of the chapter is devoted short description of the *modus operandi* of the static eze, the high-frequency effleuve, the static spark and ic wave current. In Chapters II., III., and IV. we find account of the application of the constant current, and modifications—simple, interrupted, sinusoidal, slow soidal, and the faradic current—accumulators and dry s. The principles of ionic medication are fully discussed in pters V., VI., and VII., and its application to medical and ical treatment, including such cavities as the antrum, the n and rectum, and the sinuses left after wounds; also the oval of nævi, stellate veins, moles, warts, and superfluous . Chapter VIII. refers to the effects of electrotherapy as neral stimulant to the tissues. Chapter IX describes the trical treatment of various paralyses, including that of facial nerve, trapezius, sternomastoid, serrati, deltoid, ati muscles, of the arm and of infantile paralysis. Chapter X. gives a detailed report of the methods of testing the reactions of muscle and nerve, including that of condenser discharges, which may at the present time be considered to hold the field. The war has produced innumerable cases of paralysis after gunshot wounds in which a knowledge of the condition of the nerve and its muscle becomes essential. Still more recently the subject has been studied by the employment of a galvanic current of known and variable strength, and the relative value of the two is still *sub judice*. An explanation of the methods of production and application of high-frequency currents follows in Chapter XI., and leads naturally to the excellent account of medical and surgical diathermy, on which subject the writer is a well-known authority. A short chapter deals with static electricity, the static bath and breeze, the wave current, and the static induced current, with the technique required for each. Chapter XIV. contains a valuable alphabetical index of diseases in which electrical treatment may be employed and the suitable modality for each affection. The final chapter gives an explanation of certain physical principles of electricity, a knowledge of which is essential to the electro-therapeutist.

A comparison of the second edition (1910) with the present issue demonstrates the considerable advance which has been made in several directions, notably in the more general employment of ionisation, the more efficient examination of the electrical reactions of muscle and nerve, and particularly in the applications of medical and surgical diathermy. The work is well illustrated, the style is attractive, the matter is excellent and up to date. It may be recommended as a guide to clinical assistants in the electrical departments of our hospitals, and should also find a place in the library of those who follow the practice of electro-therapeutics.

Kala-Azar: Its Treatment. By UPENDRANATH BRAHMACHARI, M.A., M.D., Ph.D., Rai Bahadur. Calcutta: Butterworth and Co. 1917. Pp. 121. Price 8*s.* 6*d.* net.

THE first five chapters consist of numerous treatments, the relative merits or demerits of which it is not easy to estimate as the data supplied are insufficient. It is quite natural that in seeking for remedies for a deadly disease very many should be tried, but it is most unsatisfactory that therapeutic methods should be advocated which are unsupported by adequate evidence. The record of "permanent recovery in 25 per cent. of cases" by quinine treatment conflicts with the author's statement that "quinine is worse than useless." The remaining chapters are mainly concerned with the use of antimony in the treatment of the disease. We cannot from the information supplied form an opinion as to the real value of antimony in kala-azar or estimate whether colloidal antimony advocated by the author has any particular advantage over tartar emetic.

The mode of determining the value of the various treatments enumerated is simple. We have in kala-azar a parasitic disease, and in this case it is the parasiticidal value of a particular drug that we wish to know. The conditions necessary for solving the question are: (1) Determination of the presence of parasites in all cases observed; (2) determination in how many cases parasites spontaneously disappear; (3) determination in how many cases parasites disappear (temporarily or permanently) after drug treatment. Systematic work on this plan would be of value; the treatment of a few cases with this or that drug is almost valueless. The author's opinion that a combined antimony-soamin-electrargol-formaldehyde treatment will be better than any hitherto adopted does not give us much confidence.

Modern Man and His Forerunners: A Short Study of the Human Species Living and Extinct. By H. G. F. SPURRELL, M.A., M.B., B.Ch. Oxon., F.Z.S. Illustrated. London: G. Bell and Sons. 1917. Pp. 192. Price 7*s.* 6*d.* net.

Dr. Spurrell has written an extremely interesting book—indeed, it may be said that he has written two interesting books, for we are inclined to regard the pre-war portion as distinct from what may properly be termed the war book. We have in the pre-war portion a constructive effort to outline the probable phylogeny of modern man, and in the war portion a philosophic discourse upon civilisations past and present and speculations upon the ultimate destinies of humanity. Both parts are written in an engaging style, making the book easy and pleasant to read.

The first part deals with the probable primate ancestry of man and with the known fossil human remains. We note

in this part three distinct features for analysis, though some dissection is necessary for their discernment, since all are blended together into a single interesting entity. First there are records of observations made in many parts of the world upon man and his provable mammalian allies. Here we meet with a certainty in touch which must impress any reader; and here, beyond doubt, is matter of permanent value. Next there are speculative deductions as to the early attainment of human characteristics; again there is firmness in the handling of the subject. Finally, there are accounts of the fossil remains of man, and deductions as to the actual early forms of the human race; here, although the style is easy and attractive, the touch appears to be less certain, and complete confidence seems to be expected from the instructed reader through the medium of a pleasing phraseology, rather than from the author's deep or critical examination of recorded facts. Such, in broad outline, is the structure of what we are regarding as the pre-war portion of Dr. Spurrell's fascinating book.

In the second portion of the book Dr. Spurrell reveals himself as a philosophic essayist, one armed with a wide classical and historical knowledge, a judicious (if somewhat pessimistic) turn of mind, and a facile pen. To review his essay in critical spirit is to spoil an intellectual treat for the reader. The whole essay forms a delightful study. It is possible that for some the impending gloom, which seems for ever ready to be written into these philosophic passages, will appear unjustified. There are many at hand buoyed up in the belief that after the war humanity will enter upon a better, a fuller, and a higher phase of evolution. There are many who hold as a cherished creed the belief that civilisation itself may evolve, and that far from being a hard taskmaster for its myriad slaves, it will itself become the servant of humanity. But it matters not what may be the ideals or the creeds of the reader; he will find himself vastly in the debt of Dr. Spurrell.

JOURNALS.

Revista de Medicina (Cartagena).—Trichinosis is a little-known disease in this country. That it is still, however, capable of proving a serious scourge is shown by the unfortunate experience that in 1914 befell Algar, a small township a few miles from the Spanish seaport Cartagena. Under the title, La Epidemia de Triquinosis del Algar, del Año 1914, Dr. Antonio Rosique gives in the *Revista de Medicina* an interesting account of the epidemic. The total number of cases was 275, of which 104 were severe, 63 of medium intensity, and 108 light cases. Dr. Rosique began by treating his cases on the lines laid down in the text-books, but was very soon convinced of the absolute inefficacy of the classic methods of treatment. "The first deaths," he says, "and the rapid increase in the number of serious cases made one fear a veritable hecatomb, and the epidemic, in view of its gravity and of the large number of persons attacked, not merely authorised but imperiously called for the trial of other methods." Five different drugs were put to trial by Dr. Rosique—namely, emetine hydrochloride, methylene blue, grey oil (injectio hydrargyri hypodermica), neosalvarsan, and cyanide of mercury. Emetine was found to be absolutely inefficacious, while methylene blue was not merely useless but seriously objectionable, in that it caused nausea, diarrhœa, partial suppression of urine, and painful abscesses which were slow to heal. Grey oil was found to be of great value and, in the doses employed, entirely free from objection. Of 107 cases treated, of which 49 were grave, all recovered, only a few reaching the cachectic phase. Against the trichina neosalvarsan proved itself a drug of great activity, "veritable resurrections" being witnessed in some very grave cases in which it was administered. It should not, in Dr. Rosique's opinion, be used in cases in which the nervous system is much involved, as it is in these cases inefficacious and somewhat dangerous. Of 20 cases treated by neosalvarsan 2 died. The cyanide of mercury is, says Dr. Rosique, "the medicament *par excellence* in the treatment of trichinosis in all its forms and in every degree. It is admirably borne by the patients, and in not one single case, not even in the gravest, did improvement fail to show itself immediately after the first injection. We recommend as the treatment of election in trichinosis, being the most efficacious known to us at present, intravenous injections of cyanide of mercury. Of 22 cases treated, 3 being of extreme gravity, all improved rapidly from the commencement of the injections. None died. The dose employed was from 4 to 7 centigrams." Dr. Rosique summarises as follows: "Trichinosis is not a disease in the presence of which, as the profession had almost come to believe, the physician can do no more than fold his arms and adopt an expectant attitude while watching the struggle between the disease and the organism. It is a disease curable in every case by the timely employment of what we may describe as its specific remedy, mercury, given either in the form of grey oil in large doses by deep intramuscular injections, or, better still, in the form of the cyanide of mercury by intravenous injection. Treated by this drug not a single case of the disease ought to be lost."

Maternity and Child Welfare. Vol. I., Nos. 9 and 10. Price 6*d.* net each.—The August number of this periodical was mainly concerned with baby welfare exhibitions, and this number (September) with nursery schools and the possibility of their development under the new Education Bill. Miss Margaret McMillan's article on this subject is inspiring; her idealism does not make her unpractical. Possibilities of closer coöperation between rescue-workers, hospital authorities, and other organisations dealing with unmarried mothers and illegitimate children are discussed in an interesting article by Miss H. M. Morant, and a useful list of homes for these children is given under the heading Child Welfare Directory. The illustrated notes on the Child Welfare Exhibition at the Central Hall last July are especially useful to those about to organise local exhibitions, and that dealing with the work of the Royal New Zealand Society for the Health of Women and Children is of extraordinary interest. The problems connected with the care and upbringing of the illegitimate child and the complete lack of adequate State control in the matter are ably dealt with in No. 10 of this publication. A most amusing imaginative description of "How our Infant Mortality was Halved" is written by Graeme Halkerston. The excellent Atlas and Gazetteer is continued, and there are interesting articles on Infant Welfare in Paris, on Mothers' Clubs, and on Air Raid Precautions and Ventilation, by Dr. S. Davies.

Archives de Médecine et de Pharmacie Navales.—In the number for June, 1917, we find an interesting account by Dr. Pélissier, staff surgeon in the French Navy, of the experiences of a party from the *Ernest Renan* battleship, which formed part of the international force sent to occupy Scutari in May, 1913 in the second stage of the first Balkan War, when the Balkan League was beating Turkey down. They arrived in the town some little time after its capture from the Turks, and found it, like any town after a siege, very dirty. They cleaned up barracks for themselves and appear to have suffered little from illness, though much from flies, and a great deal in May from a plague of fleas. Thanks to quinine and mosquito-nets they escaped malaria. They found the water-supply had been investigated bacteriologically by the Turkish physicians and passed as safe, but when the warm weather came on they sterilised all drinking water, at first by boiling, but as that proved awkward it was replaced by a chemical method, 6 per 10,000 of permanganate of potassium being added for half an hour, and then 2 per 10,000 of tartaric acid. After an hour's sedimentation the water, now sterilised, was used for drinking. The quantities of reagents were clearly in excess of what is necessary. The Turks are stated to have had but poor ambulance service, and the fortune of war was always against them; the Serbian service was well organised, while the Montenegrin wounded had only the care of two brave and devoted French Red Cross workers, Dr. Ratel and Mdlle. Fricht. The descriptions of the battle-fields of those old days, with their barbed wire and shell-holes made by three- and four-inch shell, are commonplaces of to-day, but Dr. Pélissier, if his report was, as we suppose, written and sent in in 1913, deserves credit for his early appreciation of the greater incidence of wounds on the head and shoulders in modern fighting, and for his clear statement that many men were lost through wearing caps which should be replaced by protective head coverings. An astonishing instance is given of endurance. An Albanian was shot through the abdomen from front to back; he fell backwards into a marsh in which he sank up to the neck. There he remained for a week, the only person to come near him being another Albanian who went through his pockets. On the ninth day he was taken to hospital, when his wounds were found closed, but his hunger was noted to be wolfish. He recovered easily.

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From a Paper read before the Therapeutical Society of Paris (14*th June*, 1916) :—

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LONDON: SATURDAY, NOVEMBER 10, 1917.

The Causation of Disease.

THE study of causation in relation to any series of natural phenomena is one of the greatest interest to thoughtful and scientific minds, and at the same time it is beset with pitfalls and fallacies to an unusual extent. The investigation of the causes of disease is one of the most baffling problems in medical science, and yet it is among the most essential and fundamental studies for the scientific practitioner of medicine if progress is to be made on right and hopeful lines. Professor ERNEST S. REYNOLDS, in choosing this problem for the subject of his Bradshaw lecture, delivered before the Royal College of Physicians of London on Nov. 8th, briefly reviews the whole field of medicine and has endeavoured to render more precise our conceptions of the actual causes of disease, and in so doing to evolve a practical nosology based on causation—which is obviously the most scientific form of classification. In so doing he has produced an instructive and stimulating essay which will well repay thoughtful consideration and study. He begins his observations with some definitions, always a difficult matter, and then makes brief reference to the methods available, from the logical and experimental standpoints, for the investigation of causes, in which he acknowledges his indebtedness to the work of Dr. CHARLES MERCIER. Professor REYNOLDS confesses his surprise at not finding a satisfactory definition of disease, and he is of opinion that we may safely define "disease as that condition of an individual in which there is, apart from the normal changes due to age, an alteration of the structures or functions or sensations usually found in the average man of any particular race." We may agree that this offers a comprehensive conception of disease, and that it is an advance on that usually offered—viz., that disease is the opposite or converse of health. At the same time the confusion between disease as a generic term and diseases as applied to individual instances of abnormal conditions remains, and we may quote from an old and honoured text-book of medicine[1]: "In truth both Disease and Health are incapable of precise definition because they are not scientific terms. They are descriptive, popular, and subjective. 'Disease' is 'discomfort.' Whatever causes bodily uneasiness or whatever by experience will sooner or later cause it, whatever interferes with our bodily functions, whatever tends to death, is disease." The difficulty of definition indicated in the famous text-book remains.

Professor REYNOLDS clearly distinguishes between effect, result, cause, and condition, and for these fundamentals he adopts Dr. MERCIER'S excellent definitions. The last two of these we quote, cause being regarded as "the action or cessation of actio nected with a frequent change or accompa unchange in the thing acted on," while con is "a passive state of or about the thing acted a cause and material to the effect." It will be therefore, that under this arrangement the f of age, sex, climate, and previous history, whicl formerly classed as predisposing causes, sho the interests of scientific accuracy be classif predisposing conditions, and the word cause s confined to the actual exciting action or dy cause. We are cordially in agreement Professor REYNOLDS in emphasising this pc view, since it tends to render more p the conception of causation and to make for accurate investigation. The exposure of fal in regard to causation is a most important m and Professor REYNOLDS draws attention to may be considered the two most common c namely, the *post hoc, propter hoc* fallacy coincidence. The former of these he paraph aptly with the remark: "It cannot be too str asserted that mere sequence does not est causation." And he points out the danger c fallacy of pure coincidence, which is no doub to the dramatic appeal it makes to consciou To eliminate such fallacies the greatest c necessary in applying the methods of investig cause and effect.

In order to reduce the problem of the clas tion or analysis of causes of disease to its sin Professor REYNOLDS considers it in parabolic He imagines 1000 healthy men and 1000 he women, each aged 20 years, free to marry and no hereditary taint, put to live in a per healthy island with sufficient flora and to maintain life: and then he attempts to cast the various affections from which and their progeny to two or three genera are likely to suffer if free from admixture fro rest of the world. Under such conditions we assume that the factors of causation woul easier to trace, and Professor REYNOLDS g them under ten headings—namely, injury, foo feeding, poisons, occupation, stress, abnormal bolism, abnormal age changes, neoplasms, para and heredity. He suggests that if unrestr immigration into the island were permitte should not introduce any new group of caus disease, but there would be a marked intens tion of at least three of them—namely, stress increased competition, parasites, and heredity. problems of causation of any disease of ob origin may thus be considered in relation to groups of causes, and in illustration of this Prof REYNOLDS takes a disease in which he has interested and upon which he has made observations—namely, disseminated sclerosis, uncommon disease of which the morbid anato established, but the causation and pathology of w are obscure if not unknown. He thinks that careful study of the disease and the condi under which it occurs, we can eliminate in food, occupation, stress, age, neoplasms, and here also extrinsic poisons, thus leaving intrinsic poi altered metabolisms, and parasites or their to

[1] Fagge and Pye-Smith: Text-book of the Principles and Practice of Medicine. Third edition, vol. i., p. 2. Churchill, London, 1891.

for consideration. By applying certain of Dr. MERCIER'S criteria, he comes to the conclusion that disseminated sclerosis is caused by a poison acting on certain special nerve tissues; but whether it is due to intrinsic poisons from perverted internal secretion or derived from the alimentary canal, or to some specific organism as yet undiscovered, he admits that it is not possible to determine at present; and he points out the important field of research here available and the similar problems awaiting solution in regard to other diseases, such as rheumatoid arthritis and spleno-medullary leukæmia.

There would seem to be little to criticise in Professor REYNOLDS'S ten groups of causes, though to utilise them for purposes of the classification of diseases is not quite so simple as might at first sight appear—and it is only fair to him to admit that he recognises this. Allowing for the fallacy of regarding conditions as actual causes, there is still the possibility of multiple causation to reckon with, and in this event a given disease might well come under two or more of the causative headings. Again, the vital reaction to different causes may be identical; for example, Professor REYNOLDS is prepared to admit that the effect of "cold" may be to induce a condition of nephritis analogous to that produced by micro-organisms or their toxins. A further difficulty may conceivably arise in connexion with poisons, since they may be extrinsic, intrinsic from metabolic defects, or they may arise from the activities of parasitic organisms, either animal or vegetable, either in the alimentary or respiratory tracts, on the surface of the body, or in the tissues themselves; the exact classification of diseases produced in these ways might be a matter of some difficulty with our present knowledge or lack of it. We need only instance the effects of intestinal stasis in illustration. The construction of most modern text-books of medicine is a striking illustration of the difficulties of classification of diseases. We could wish for some uniformity in this matter, both in text-books dealing with clinical or descriptive medicine and those devoted to prevention. Obviously the etiological classification is the ideal one, for a knowledge of causation is essential for prevention and highly desirable from the points of view of diagnosis and treatment; though it is well to recognise that an effective treatment can be discovered for a disease of unknown causation, and that the discovery of the cause does not necessarily at once lead to the evolution of a specific treatment. It is evident that even so simple a grouping of causes as that offered by Professor REYNOLDS would not be satisfactory for a text-book classification of diseases, and that the present compromise arrangement, which is partly etiological and partly topographical, though unscientific, is yet convenient, especially for purposes of reference. This, however, does not detract from the value of real classification and is no criticism of it, but only a confession of the gaps in our knowledge and of the need for accurate and combined research into causation upon the lines laid down in the Bradshaw lecture.

Medical Students and the Shortage of Medical Men.

AT the commencement of the war much difference of opinion was manifested as to the advisability of using medical students for combatant service, it being clearly seen that if this policy was pursued in any general way there would sooner or later be a shortage of practitioners in this country. It was not foreseen that the shortage would actually affect us during the war, for those who put the duration of the struggle as three years at the outside were regarded, especially by those who knew least, as unduly pessimistic. But it was widely pointed out that even a war of two years' duration, if it shut off all recruits from the medical profession, would have an evil outcome that was not receiving sufficient consideration. The medical profession is wanted with equal urgency for military and civilian purposes, and it is a profession whose briefest range of training must be taken at from five to six years. The policy of suspending all recruits to its ranks must therefore be dangerous, though it would, of course, be justified by the knowledge that the addition of our potential medical men as combatants to our army, when numerically so small, was a factor of greater importance. And this is how the matter came to be regarded by those in authority in the early days, and the view taken by Lord KITCHENER was backed by the spirit of the medical students themselves, who with unanimity declared their intention of joining the forces at the earliest opportunity. The question was one of policy, and one on which men of equal ability to judge differed strongly; and as a result a compromise scheme was employed whereby senior students, who were enrolled in the combatant ranks, were recalled by the War Office and directed to complete their curriculum with a view to qualification for the Royal Army Medical Corps, the junior students being subject to enlistment or encouraged to train as officers.

It would seem that this compromise was also based on the probability that the war would be over within two years. In that case the measure of its inconvenience to the country would be that when a shortage of qualified medical men occurred it could only be partly compensated for by the increase in the number of qualified medical women. But during 1915 and 1916, as during this year, it became clear that the shortage of practitioners due to a decreased number of qualified men registered, would have effect for a longer range of time than was estimated, and would be aggravated by a growing depletion among those who were qualified, whether carrying on medical work with the Navy and Army or at home. We have a total medical service of so many thousand men—the figure is not given because it varies enormously according as to what we include as effective—of whom at least half the effective on any basis of calculation are now in naval or military employ. Of the remainder a large proportion are not in military employ because of their age although their professional work is most valuable. In both these classes it is clear that the death-rate

will be comparatively high. We know that the number of medical men who have been killed or disabled in discharge of their duties with the Navy and Army forms an appreciable percentage of the great number employed, while it is obvious that at the other end of the scale, among the men of advanced age, the death-rate from natural causes must operate with force. We have therefore now a double wastage in a service which is absolutely necessary for the well-being of the nation as a whole, and for its fighting forces by sea and land—the two things are not separable, for the quota that is not fighting is working, against time and against fatigue, to support the combatant quota. But no recruits are coming in to this diminishing section of the national activity save a certain number of female practitioners. The drain will continue to be met, and only in few districts is there any sign yet of an inadequate medical service, judged by the standards of real safety; but it is a serious thought that this position may have to continue for some undefined period after the war.

Last week an unauthorised statement was published in a lay paper to the effect that within the next few days all the medical students who were serving in combatant positions in the Army would be demobilised and sent back to their medical schools. The information was not correct, if only because it has not yet been decided exactly what move in this direction will be taken by the authorities; but we are glad to learn that the matter is receiving official attention at the present moment. It is to our mind an enormously important question, and we are very glad to learn authoritatively that it is being treated as such. We are perfectly aware that man-power must always be of paramount urgency in every practical course undertaken by a War Minister or a War Council, while the sacrifice of life that has necessarily taken place among our young combatant officers puts a special value for military purposes on the very class of youth who had already embraced, or who had intended to embrace, the calling of medicine. Those wanted as young doctors are exactly those who are wanted as young officers. Seeing all this, we do not think that the policy of those in authority in 1915 was wrong for its time and in its circumstances, but none the less we are glad to learn that it may be revised now. We should like to hear that all medical students at present in the Army, who had begun study in the direction of medicine before the war broke out, have been permitted to return to their schools, but so sweeping a policy cannot be followed out. The figures produced to the Army Council do not, as yet at any rate, warrant this while other difficulties as to the status of students present themselves. Meantime students who had begun their curriculum prior to August 1st, 1914, and had at the time of enlistment completed two years of the course, may claim to be returned to their studies under the Army Council Instructions of 1917. They must proceed to get their qualifications with all possible expedition. That the conduct of medical schools is impaired by the war is, of course, obvious, but if the teaching staffs are thinned the supply of material is sadly abundant, and the schools should be more flexible in their conduct of education during the hour of stress. We do not want to meet the case of the shortage of medical practitioners by lowering the standards of practical efficiency for those who prepare to enter our portals, but by as much as the academic side of their training or examinations can be abbreviated, and the practical work of pathology attacked directly, by so much the quicker will the existing troubles be arrested.

Annotations.

"Ne quid nimis."

THE SCIENTIFIC BOYCOTT.

AT a meeting of the Société Internationale de Chirurgie, held in Paris on Nov. 3rd, and attended by delegates from Belgium, France, Great Britain, Serbia, and the United States, the following course of action was agreed upon:—

1. The Société Internationale de Chirurgie will be dissolved, as after the publication of the volume of Transactions of the meeting held in New York on April 14th, 1914.

2. If there should be any assets after the publication of this volume the money will be divided *pro rata* amongst the members, so that each member of the Germano-Austrian group shall receive his share, but the shares belonging to members of other nations will be retained and applied to some object of scientific repatriation in Belgium.

3. A new society will be formed after the war on a basis similar to that of the Société Internationale de Chirurgie to be called the Société Interalliée de Chirurgie.

This society will also be open to such surgeons of neutral countries as may be nominated for election by the general committee, and the purport of the dissolution of the old international gathering will be achieved by the exclusion of the Austro-Germanic adherents.

INFUNDIBULAR TUMOUR IN A CHILD CAUSING DIABETES INSIPIDUS AND TOLERANCE OF ALCOHOL.

THE following case is reported by Dr. L. Newmark, of San Francisco, in the *Archives of Internal Medicine* for April last:—

The patient was a child of 14, who developed unquenchable thirst about the age of 9. It was ascertained that the boy used to drink as much as two gallons of water during the night and that a bucket of a capacity of four gallons was placed in his bedroom as a urinal and was regularly found half filled in the morning. The father added that the urine looked like the water the child drank. Its specific gravity varied between 1002 and 1006; sugar and albumin were always absent. Gradually he began to crave stronger drink, and severe beatings at home did not deter him from various tricks to obtain wine. He would drink three or four glasses of beer in rapid succession or a similar quantity of wine. He took whisky also, it was discovered, but he was never drunk or affected by drink. After a bout, when four quarts and a pint of beer were consumed, he reported at school and performed his tasks well, as usual. He was also early addicted to cigarette-smoking. At the age of 14, when seen by Dr. Newmark, he was found to be a weazened but alert and agile little boy, who looked not more than 10 and had not grown, apparently, for some years. The discs were normal and no defect of the visual field could be detected. A month later, however, increasing headache was complained of, and on re-examination the discs were found to show early optic neuritis; anosmia was present on both sides; the polydipsia was extreme. X ray examination showed a normal sella turcica, while the visual fields remained normal. The child died a week later and at

the autopsy a tumour was found, springing from the side of the infundibulum and occupying anteriorly the space between the anterior commissure above and the optic tracts below. The chiasma was flattened over the basal aspect of the growth, which was mainly interpeduncular and had distended the third ventricle and separated the hemispheres at the base. Microscopically it appeared to be of epithelial origin. All that could be found of the pituitary body was the pars anterior and remnants of the pars intermedia, infiltrated in parts by the large cells of the tumour. The pineal body was very small and showed definite atrophic changes, with disappearance of cellular elements.

The association of diabetes insipidus with toleration of drugs has been noted from time to time, but the latter cannot be due merely to the activity of the urinary secretion, or, rather, this fails to explain the exaggerated insusceptibility in regard to alcohol and other substances. In the present case the brain was not affected by alcoholic draughts to which immaturity and the presence of a large vascular tumour might be supposed to render it peculiarly sensitive. On what this immunity depended is matter for investigation, but it appears clear that the tolerance of alcohol is independent of diuresis. As for the polyuria, there is still uncertainty as to its mechanism and even as to the organ involved. There is abundant evidence to connect polyuria in a general way with disease in the neighbourhood of the hypophysis, but beyond that lie the difficulties. Excessive function of the posterior lobe has been offered as an explanation, then diminished function, then "dysfunction"; others have left the pituitary altogether and brought forward experimental evidence incriminating the grey matter of the third ventricle, finding there a centre for the regulation of carbohydrate assimilation and the water content of the organism. Further, growths in the pineal body have been associated with diabetes insipidus. At present the medulla and the floor of the fourth ventricle figure much less frequently than they used to in the pathology of the condition.

THE CONJOINT BOARD OF SCIENTIFIC SOCIETIES.

In March last year, at the instance of the Royal Society, a conference was held with representatives of the leading scientific societies with the idea of establishing a Conjoint Board of Scientific Societies. The objects in view were that such a body should (1) promote the coöperation of those interested in pure or applied science; (2) should supply a means by which the scientific opinion of the country, on matters relating to science, industry, and education, would find effective expression; (3) should take such action as might be necessary to promote the application of science to our industries and to the service of the nation; and (4) should discuss scientific questions in which international coöperation seemed advisable. The scheme has since materialised: a conjoint board of scientific societies has been formed, and the personnel includes acknowledged leading authorities in every branch of scientific work. There has just been issued a report giving the aims, objects, and results of the first year's work (1916–17). Ten subcommittees were appointed and the majority have already presented final or interim reports. Amongst these are the International Catalogue subcommittee, the subcommittee on the Application of Science to Agriculture, the subcommittee on National Instruction in Technical Optics, the Watching subcommittee on Education, the subcommittee on the Prevention of Overlapping among Scientific Societies, the Metric System subcommittee, the Anthropological subcommittee, the Iron-ore subcommittee, the subcommittee on the Water-power of the British Empire, and the subcommittee on Timber for Aeroplane Construction. It will be seen that a very wide range of subjects is covered and the reports already furnished show where reforms are indicated and fresh organisations needed. The whole work is of supreme importance to the future welfare of the country and it is reassuring to find such a capable body of scientific experts giving their earnest attention to the problems presented.

STREPTOTHRIX INFECTION OF THE LUNG.

It has been noticed by several observers that the streptothrix is capable of producing in human beings pathological processes in the lungs, and this condition has been described under the name of pseudotuberculosis hominis streptothrica. A further contribution to the study of this interesting condition has lately been given by Professor Sanfelice, of the University of Modena,[1] who describes the case of a girl 14 years of age who presented all the symptoms of pulmonary tuberculosis, but in whom repeated examination of the sputum by every known method failed to detect the presence of Koch's bacillus. Subcutaneous inoculations with an emulsion of the expectoration were made in two guinea-pigs, and plate cultures in agar made of the same. One of the animals died after 14 days, and a small collection of pus at the site of inoculation developed colonies of streptothrix on agar plate cultures. The other animal died after 20 days with a small abscess at the site of inoculation, considerable enlargement of lymphatic glands, and small nodules in the liver, spleen, and lungs. Agar plates developed colonies of streptothrix, but in neither case were any acid-proof bacilli seen. Similar results were observed in plates developed directly from the sputum. The streptothrix isolated by Professor Sanfelice developed readily on the ordinary culture-media, both in the incubator at a temperature of 37° C. and at that of the surrounding air (15° C.). In plate cultures on agar the colonies did not attain a larger size than a pin's head, and were yellow in colour like those of *Staphylococcus cereoflavus*. Under the microscope they were composed of a thick network of fine filaments, which form at the periphery a bright ring visible to the naked eye. Plate cultures on gelatin had the same appearance, and there was no liquefaction of the gelatin. Broth cultures developed rapidly, not as a diffuse turbidity, but as minute granules which formed at the bottom without leaving any pellicle on the surface. Streak cultures on agar formed a soft yellow layer firmly adherent to the substratum, the surface of the layer being smooth and devoid of the wrinkles commonly met with in most streptothrices. Stab cultures in gelatin developed more freely on the surface than elsewhere, with the formation of numerous peripheral filaments, so that the culture assumed a star-like appearance. Unlike other streptothrices, development on potato was not exuberant, but after some days a thin yellow pellicle formed which was smooth and limited to the point of inoculation. Cultures developed for some days showed after staining numerous bacillary forms similar to *B. diphtheriæ* and a few long ramifying filaments. Emulsion of the plate cultures when inoculated into guinea-pigs produced typical lesions of pseudo-tuberculosis. From its morphological characters this streptothrix should, according

[1] Annali d' Igiene, Sept. 30th, 1917.

ofessor Sanfelice, be classified as belonging to group of micro-organisms which represent the of union between diphtheritic and pseudo heritic bacilli and the group of streptothrices cterised by long branching filaments, and develop on agar in compact layers with a led surface.

REGULATIONS IN REGARD TO OPIUM AND COCAINE.

Home Secretary has called the attention of ered chemists and other persons authorised the Defence of the Realm Regulations to n cocaine and opium to the fact that fresh tions have been made under the Defence of ealm Act as to the records which they are ed to keep. The new Regulations are as :—

lation 40B shall be amended as follows:—

r the substitution of the following new subsection for section (7):

(7) If any person—(*a*) prepares opium for smoking; (*b*) deals in or has in his possession any opium prepared for smoking; or (*c*) being the occupier of any mises permits those premises to be used for the pose of the preparation of opium for smoking or of sale or smoking of opium prepared for smoking; or is concerned in the management of any premises for any of such purposes as aforesaid; or (*d*) has in possession any pipes or other utensils for use in nexion with the smoking of opium or any utensils se in connexion with the preparation of opium for king; or (*f*) frequents any place used for the pose of opium smoking; he shall be guilty of a mary offence against these regulations."

the substitution of the following new subsection for section (8):—

(8) Every person who has dealings in cocaine or m (including sales to persons outside the United dom) shall comply with the following provisions: He shall enter or cause to be entered in a book kept the purpose such particulars with respect to all ings in cocaine or opium effected by him as the etary of State may prescribe; (*b*) he shall make the y with respect to any transaction on the day on h the transaction is effected; (*c*) where he carries usiness at more than one set of premises he shall a separate book in respect of every set of premises; e shall keep the book in some part of the premises hich it relates so that it shall at all reasonable times vailable for inspection by any person authorised in behalf by the Secretary of State, and shall allow person so authorised at all reasonable times to ct it; (*e*) he shall not cancel, obliterate, or alter ntry in the book or make therein any entry which true in any particular."

gulations close with the warning that if son fails to comply with any of the new ns he will be judged guilty of a summary

JPATION NEUROSIS OF THE LOWER LIMB.

the *Medical Journal of Australia* Dr. J. C. as reported the very rare condition of an on neurosis of the lower limb.

ient was a fettler, aged 54 years, who was quite about eight months before, when he noticed a tiffness in the left leg. This gradually increased revented him from doing his work properly, as rom walking. Although he felt perfectly well bed, and could do anything he liked with the leg g down, and when he arose and began to walk leg seemed all right, yet as he continued walking. ially if he tried to walk at all quickly, it failed ecame more and more flexed at the hip, and the the ankle, so that it could not be straightened was put forward to take his weight, but as rward to put his weight on it the foot came back he position of the right foot. Then he had to lean bent left leg and throw his right leg forward, and n that and swing the left forward again as far as ut as it was so bent and stiff he could not reach with it unless he bent his right knee and hip. iscomforts he felt were an aching in the left tendo Achillis and fatigue in the back. Unless he was very careful to watch this flexed left leg in walking he would be thrown, especially if he was carrying a heavy weight. For eight years he had been a fettler. His work was to clean iron-castings taken from the moulds, chip off projecting pieces of iron, and then polish them on an emery wheel. Some of these castings were 18 kilogrammes in weight and nearly a metre in width, and as the wheel was low he had to stoop down, flexing the hip and knee and foot, and carry the castings from just in front of him to a point considerably to his left, so as to grind the one-metre edge. This threw the whole weight on the bent left leg, while the right leg was in a position of abduction to the right and carried almost no weight. If he walked on the heels and kept the soles off the ground (which could only be done with the knees stiff) the leg was not thrown into spasm, and if he walked on the balls of the toes and kept the heels off the ground he did not get the stiff flexion. But directly he tried to walk in the ordinary way this came on. By fixing a back splint from the upper part of the thigh to the lower part of the leg, and so preventing flexion at the knee, walking was made somewhat easier and less uncertain, but the spasm was still present and resistance to flexion was fatiguing.

Occupation neuroses usually affect the upper limb. In addition to the well-known writers' cramp there is the cramp of pianists, violinists, flautists, milkers, seamstresses, tailors, cigar-rollers, telegraphists, diamond-cutters, and barbers. Dancers in ballets get a cramp of the calf, as do also treadle-workers, but the conditions are usually transient. No doubt the reason that the occupation neuroses affect the upper limb so much more frequently is that they are always concerned with skilled movements repeated at intervals, and such movements are obviously more commonly executed by the upper limb.

ARTIFICIAL SUNLIGHT.

WITHIN the last few years the therapeutic value in surgical tuberculosis of exposure to sunlight has become established, owing a good deal to the practice of Rollier of Leysin. Except in southern climates, however, or those of the high Alps, where the sun shines strongly throughout the year, winter causes an inconvenient interruption to the treatment, which generally needs to be of long duration. Accordingly attempts have been made to substitute for the sun's rays, when absent, an artificial light, employing until recently that furnished by the mercury-quartz vapour lamp. The results have, on the whole, been inferior to those obtained by natural heliotherapy, and in several communications lately the carbon arc light is mentioned as being preferable, it is conjectured as exerting greater penetrative power. Some workers at the Finsen Medicinal Light Institute, Copenhagen, have reported[1] on the subject. Reyn and Ernst summarise their experiences as follows: (1) The carbon arc light can satisfactorily replace the sun-bath; (2) light alone without other clinical means can cure surgical tuberculosis; (3) light baths are a valuable mode of treatment in lupus; (4) the carbon arc light is better for the purpose than the mercury-quartz, and should alone be used whenever possible. The varieties of surgical tubercle treated comprised lupus, favourable results being claimed in cases resistant to other measures alone, and tubercle of lymphatic glands, of bone and joint, of the peritoneum, and of soft tissues. The last-named lesions responded best. As a rule, ordinary surgical measures seemed to be combined with the light treatment, which was not directed only to the site of disease, but generally to the surface of the whole body. Other workers (Mol in Holland and Collin at a Danish sea bathing hospital) supplemented the carbon arc illumination

[1] Hospitalstidende, 1917, Nos. 19, 20.

with ordinary incandescent lights, claiming that the higher temperature obtained increased the skin reaction. As in natural heliotherapy, pigmentation is deemed a favourable sign. Seventy-five ampères are mentioned as a suitable strength of current. With the winter months upon us, and at a time, too, when tuberculosis of all kinds, unfortunately, is rife, it might be well for this form of treatment to be tried here more than is at present the case. Little more than a year ago, indeed, the number of therapeutic mercury-quartz lamps in this country could be counted on one's fingers.

THE PRELIMINARY EXAMINATION OF THE ENGLISH CONJOINT BOARD.

THE Royal Colleges of Physicians of London and Surgeons of England have revised the Regulations relating to the Preliminary Examination required for the Diplomas of the Colleges. Under the new conditions Latin is now an optional subject, and a larger range of optional subjects has been adopted. A candidate must pass in: (*a*) English; (*b*) Mathematics; (*c*) one of the following languages—Latin, French, Russian, German, Italian, or Spanish; (*d*) a second language selected from the foregoing list or one of the following subjects—Higher Mathematics, Experimental Mechanics, Chemistry, Physical Geography, Physics, Botany, Biology, Geology. The revised Regulations come into force at once.

THE WHITEHALL RECRUITING CASE.

AFTER a prolonged ordeal of preliminary inquiry and trial at the Old Bailey Dr. A. M. R. Sinclair, a medical practitioner, was recently acquitted of the serious charge of conspiring to defeat the provisions of the Medical Services Acts in connexion with the passing or rejecting of recruits for the Army. In summing up to the jury Mr. Justice Salter pointed out that Dr. Sinclair bore a high character and had a good practice, and that there was no motive to cause him to take part in any conspiracy. He had received none of the money supplied by the military authorities and none from the man Grantway, who was afterwards convicted. There was no evidence, his lordship said, that Dr. Sinclair had ever classified a recruit unfairly or even incorrectly. As Mr. Justice Salter, at the conclusion of the evidence for the prosecution, had directed the jury to acquit one of the other men charged, it may have been wondered by some why he did not take a similar course in the case of Dr. Sinclair. The legal reason for this was sound and the course worked to the advantage of Dr. Sinclair, as was no doubt intended. By allowing the case of Dr. Sinclair to go to the jury the opportunity was given to explain or contradict things given in evidence which might otherwise have left Dr. Sinclair under some suspicion. By accepting Dr. Sinclair's evidence in his own defence, as it is clear that his lordship did, a full establishment of innocence was secured. Dr. Sinclair not only denied the charge, but he defied the War Office to produce a single recruit wrongly classified by him, and declared his own independence in examining the men fairly, in spite of an apparently official suggestion that all should be passed and dealt with later by the army surgeons who might attend them. Dr. Sinclair is to be congratulated on complete exoneration from a degrading charge, and will have everyone's sympathy in a grave ordeal.

THE DIGESTIBILITY OF BREAD MADE FROM TWO PARTS OF WHEAT AND ONE PART OF OATS, BARLEY, MAIZE, OR RICE.

BY E. I. SPRIGGS, M.D., F.R.C.P.,
AND
A. B. WEIR, B.Sc.
(*From the Duff House Laboratories*).*

THE proposition that barley, oats, maize, and rice are good human foods really needs no scientific defence, for the history of mankind relates that nations have been fed upon each of these varieties of corn; also our modern knowledge of their composition and many experiments tell us that they can supply the place of wheat in a mixed diet.

The measures taken by the Government to make good the lack of wheat by the use of other kinds of corn have, nevertheless, called forth some complaints. The mass of our people did not realise before the war that the cereals given to animals are good human foods; and did not know that by eating oats, barley, or maize ourselves we can get from them several times the food value that is obtained by turning them into beef or pork. The enormous amount of food which can be thus made available is shown by the figures of Professor T. B. Wood,[1] who calculated that of nearly 17 million tons of various kinds of corn used in this country before the war only 5 millions went for human food. This is less than the average production of home-grown corn, which amounted to 6½ million tons.

In an article written for the Ministry of Food in the spring of this year[2] the use of a mixture of barley flour, oatmeal, rice flour, or maize flour with wheat flour for making bread at home was suggested by one of us, in the proportion of one part of the meal to two parts of wheat flour or war flour. This is a higher proportion than has hitherto been used by millers in diluting wheat flour. The experiments here described were made to determine the digestibility of this bread so prepared.

These observations have no direct bearing upon the relative advantages or disadvantages of grinding into flour a larger or smaller proportion of the wheat grain. A good deal of work has been done on that subject, and was summarised up to the year 1911 in the valuable report by Dr. J. M. Hamill[3] to the Local Government Board. His conclusion was that "so far as relates to available 'digestible' protein and energy ..... the differences in nutritive value between different grades of flour made from the same wheat are usually insignificant when compared with the differences in nutritive value of flours made from wheats differing widely from one another in composition."

The Diet.

In our experiments we intended to have used a Government regulation wheat flour milled to yield about 80 per cent. of flour, but we were unable to obtain a certified sample of this, and therefore used a pre-war white flour for the basis of our breads, to which the other cereals were added.

In many researches upon the assimilability of different foods the food concerned has been given in such large quantities as to form the greater part or the whole of the diet. This method is capable of great accuracy, but the results obtained do not always apply when the same food is eaten with a mixture of others. Our object was to find out what changes, if any, took place in the proportion of fats assimilated from an ordinary mixed diet when wheat was replaced by a moderate amount of other cereals. The use of a mixed diet brings in sources of error. We have, however, special facilities for giving the same food day by day, as the staff is accustomed to the preparation and accurate weighing in grammes of many different foods.

For the present purpose those foods were chosen which could be had in as constant a form as possible over a period of several weeks, and the subject of the experiment also

* A summary of the experiments here described in detail was contributed to the discussion on War Bread, held at the Medical Society of London on Monday, Oct. 8th. (See THE LANCET, Oct. 12th, 1918, p. 572.)

ined for himself beforehand what dishes he preferred and ould find least tedious when repeated over the same period. ach day's food was prepared under the personal supervision one person, who also made the bread. The quantities of ur used were weighed out in the presence of one of us.
The diet was as follows:—

Breakfast: 2 eggs; butter, 20 grammes; bacon, 40 g.; rmalade, 30 g.; cocoa, 250 c.c., from 14 g. of cocoa; milk, c.c.
unch: Fillet of beef, 112 g.; potato, 56 g.; cabbage, 56 g.; e pudding, 130 g.; tinned pears, 200 g.; butter, 10 g.; am, 20 g.; black coffee.
ea: Butter, 20 g.; jelly, 20 g.; milk, 100 c.c.; cocoa, c.c., from 14 g. of cocoa.
inner: Clear soup, 250 c.c.; haddock, 174 g.; butter, 20 g.; ese, 42 g.; coffee, 250 c.c.; milk, 100 c.c.

he eggs were chosen of the same size. The same cheese, malade, and jelly were used throughout. The ingredients he rice pudding were weighed every time. The soup was le in exactly the same way each day.
f these foods parts equal to those eaten were taken and, r mincing when necessary, the whole mixed and analysed. analysis gave:—

	Grammes.			Calculated calories.
	Protein.	Carbohydrate.	Fat.	
rmined	98	117	169	2461
mated from tables	112	106	153	2302

ie value of the diet as estimated from analyses of cooked s is placed beneath for comparison. With the above a loaf of bread, weighing about a pound, was eaten r. When the bread was added the diet gave just under calories per day, or about 65 calories per kilogramme for ubject. Of this total food value about 38 per cent. was e form of bread.
e bread was prepared as follows. The day before an riment began 26⅔ oz. of the white floor used was weighed nd mixed with 13½ oz. of the meal or flour to be tested, g 2½ lb. of the mixed flour. This was then made into l with yeast as described in Chapter IX. of "Food and to Save It,"[2] the dough being divided into three equal s. As each experiment lasted three days the whole of our weighed out was consumed.
e white flour used was a pre-war white Canadian spring ; the oatmeal was described as fine Scotch oatmeal; arley flour and the maize were supplied by Messrs. han, of Aberdeen, and are described as finest sifted r flour and finest sifted maize flour respectively.
e war flour tested for comparison was obtained through indness of Mr. Oscar Andrews, of Belfast. It is a re of 80 per cent. wheat flour, 10 per cent. maize flour, 0 per cent. barley flour; the wheat flour being 83 per of the wheat, the maize flour 80 per cent. of the maize, he barley flour 65 per cent. of the barley.
white and war bread resembled each other in taste, being crusty appetising loaves. The oatmeal and bread were also good, and the rice bread was very ndeed. The maize bread was heavy but had an ble taste, and the heaviness did not made it un- ble. It may be mentioned here that similar oatmeal has been eaten for some months by a number of under the observation of one of us.

Details of the Experiment.

he analyses were done by A. B. Weir. Each figure mean of at least two concordant results. The carbo- e was determined gravimetrically after hydrolysis with sulphuric acid in an autoclave at 115° C. for one hour. her analytical methods were as described in a former

ysis of the flours used gave the following figures:—

	Protain per cent.	Carbohydrate per cent.	Ether extract per cent.
ite flour ...	13·0	80·5	2·4
meal	12·5	74·1	7·3
ley flour ...	8·1	83·0	1·7
ize meal ...	8·7	82·5	4·2
e flour ...	7·9	84·7	0·5
r flour ...	10·9	81·7	2·1

these figures the amount and composition of the ken as bread in each mixture of two-thirds wheat d one-third oatmeal, barley flour, maize meal, or rice ily calculated. It was thought better to estimate d value of the total flour used than to analyse the hus escaping the difficulty of being sure of getting proportionate parts of crust and crumb. A little of the food value of the flour is lost by fermentation to alcohol, how much we do not know; but it is only a small quantity and should be approximately the same in each experiment. The amount of yeast used was constant.
The subject of the experiment was a healthy young man of 9 st. 10 lb. (61·7 kilogrammes). He was working for 7 to 8 hours a day, and took exercise out of doors about two hours a day, walking, bicycling, and fishing. He had no indigestion, the appetite was good, and the bowels were open naturally every day.
The fæces corresponding to each kind of bread were separated by charcoal, which was taken at 6.45 A.M., at the beginning and end of each three-day period. it passed through the body in from 24 to 48 hours, a normal time. The total urine was collected and the nitrogen determined in order to ensure that no great variations in nitrogenous equilibrium took place.
In determining how much of the food material is lost in the fæces certain assumptions are made which, though not strictly true, do not invalidate the results of experiments done under conditions as far as possible identical. First, it is assumed that the ether extract of both foods and fæces is fat. Secondly, the nitrogen of the food and fæces is represented as equivalent to a corresponding amount of average protein. Thirdly, the nitrogen in the fæces is regarded as unassimilated nitrogen from the food, whereas a good part of it is contained in material cast off from the lining of the intestine, which may, however, be supposed to be fairly constant in health from day to day.

Results.

The following table gives the results obtained from each three days' experiment, expressed as grammes per day:—

Totals per Day (in Grammes).

	Nitrogen.	Carbohydrate.	Fat.	Calories.
White bread—				
Food taken	23·5	420·6	178·1	3987
Fæces	2·1	1·5	10·8	164
Food assimilated...	21·4	419·1	167·3	3823
Oatmeal bread—				
Food taken	23·4	412·5	184·4	4011
Fæces	2·9	3·7	10·8	184
Food assimilated...	20·5	408·8	173·6	3827
Barley-meal bread—				
Food taken	20·9	423·7	177·3	3961
Fæces	3·8	2·9	9·4	196
Food assimilated...	17·1	420·8	167·9	3765
Maize bread—				
Food taken	21·0	423·1	180·4	3997
Fæces	2·8	5·7	8·6	178
Food assimilated...	18·2	417·4	171·8	3819
Rice bread—				
Food taken	22·4	425·9	175·8	3965
Fæces	2·3	2·7	7·7	142
Food assimilated...	20·1	423·2	168·1	3823
War bread—				
Food taken	22·2	424·2	177·0	3965
Fæces	2·5	4·4	7·7	154
Food assimilated...	19·7	419·8	169·3	3811

The results can be compared more easily when expressed as the percentage of the total food taken which was assimilated in each experiment.

Percentage Assimilated.

	Nitrogen.	Carbohydrate.	Fat.	Calories.
White bread	91·0	99·6	93·9	95·9
Oatmeal bread	87·6	99·1	94·1	95·6
Barley bread	81·5	99·4	94·4	95·0
Maize bread	86·7	98·6	95·2	95·5
Rice bread	89·7	99·4	95·6	96·3
War bread	88·8	99·0	95·6	96·1

These figures show certain differences in the percentage absorption of nitrogen (or protein), which varied from 81 per cent. in the case of barley bread to round about 90 per cent. in the cases of white bread, rice bread, and war bread. The variations in the absorption of carbohydrate and fat are smaller; but it is remarkable that they appear to neutralise the effects of the nitrogen variations, for when the proportions of the total food values assimilated in each experiment are compared, as shown in the last column of the above table, they are seen to be almost identical, the lowest being 95 per cent. and the highest 96·3 per cent.
The percentage of food absorbed therefore in these six experiments, each with a different kind of bread, was almost

the same. The variation from the mean was less than 1 per cent.

As regards the effect on the bowels, part of the charcoal taken at 6.45 A.M. appeared the next morning in each case, and the rest was passed out the morning after, except in the rice experiment, when the final charcoal took two days to appear. In the case of oatmeal bread, rice bread, and war bread, the part containing the first charcoal was rather less solid. During all the rest of the experiment the fæces were formed and moderately hard.

Conclusions.

1. If properly prepared and baked, palatable breads can be made from a mixture of one-third of oatmeal, barley flour, maize flour, or rice flour, and two-thirds of wheat flour.

2. Experiment showed that each of these breads, when taken with a mixed diet, was, for the time of the observation and for this subject, as nourishing as the bread made from white wheaten flour.

References.—1. T. B. Wood: The National Food-Supply in Peace and War, p. 16, Camb. Univ. Press. 1917. price 6*d*. 2. E. I. Spriggs: Food and How to save It, chap. ix., H.M. Stationery Office, 1917, price 3*d*. 3. J. M. Hamill: On the Nutritive Value of Bread made from Different Varieties of Wheat Flour, p. 30. H.M. Stationery Office, 1911, price 3*d*. 4. E. I. Spriggs and A. J. Leigh: A Case of Pancreatic Insufficiency, p. 15, Quart. Journ. Med., vol. ix., 1915.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Control of Typhoid Fever in the French Army.

RECENT statistics illustrate the progress made during the war in dealing with typhoid fever, and establish the excellent results obtained by the use of antityphoid vaccination. The figures for the first three months of the war, which are probably very incomplete, give 8191 cases with 3076 deaths—i.e., a mortality of 37 5 per cent.—the census of cases being certainly far short of the truth, taken as it was during a period of disorganisation. Later statistics doubtless give a truer idea of the facts. During the period Nov. 1st, 1914, to Oct. 31st, 1915, 87.618 cases with 8614 deaths were recorded; from Nov. 1st, 1915, to Oct. 31st, 1916, 17,656 cases with only 700 deaths. The frequency of typhoid was therefore five and a half times less during the second year of war than during the first, and the mortality more than twelve times less. These results are manifestly due to the general adoption of vaccination, which was not made compulsory in the army until March 28th, 1914, only some 125,000 men having been rendered immune by the fateful day of mobilisation, August 2nd. The first vaccine used immunised solely against Eberth's bacillus and it was not until later that vaccines were introduced against paratyphoid infection A and B, the significance of which was only slowly recognised. At the present moment the immunity due to vaccination is beginning to decline, and in view of the appearance of new cases among inoculated men the Service de Santé has recently decided to proceed to general revaccination. By the study of the statistics in periods of six months certain illuminating conclusions will be apparent. The first period, ending on April 30th, 1915, naturally shows the highest figures—viz., 58,014 cases with 7013 deaths, that is, a case-mortality of 15·3 per cent. From May 1st to Oct. 30th, 1915, vaccination having become more general and the provision of drinking water more abundant, the number of cases fell to 29 604 and of deaths to 1151, the case-mortality being thus 3·9 per cent. Compared with the first half-year, the frequency of typhoid has been reduced by more than one-half, while the mortality per 1000 men is seven times less. Vaccination against paratyphoid was then adopted and in the next following six months the frequency fell to 12,043 and the number of deaths to 302; from May 1st to Oct. 30th, 1916, the frequency was still further reduced, becoming almost negligible in May and June. Finally, from Nov. 1st, 1916, to Sept. 1st, 1917, the reduction continued; during these ten months there were only 2048 cases and 129 deaths. The number of vaccinations required to produce this result should be noted. The central laboratory of Professor Vincent at the Val-de-Grâce Military Hospital furnished 5.513,073 doses of vaccine. To gain an idea of the benefit resulting from this enormous labour it is calculated that if the frequency and mortality of typhoid had remained what they were at the end of 1914, the number of cases of typhoid fever would have exceeded a million, and the number of resulting deaths 145,000, leaving out of account the probable aggravation of the disease caused by long-continued fighting and by three hot summers. No less convincing is a comparison of the sanitary condition of the French Army before the war according to the latest official figures (1911): the cases of typhoid and paratyphoid occurring in the armies at the front are now seven times less numerous, and the deaths eight and a half times fewer than in time of peace.

Iodide of Starch as an Antiseptic.

M. Auguste Lumière, of Lyons, has recently made interesting experiments with a new antiseptic which is said to be as powerful and as harmless for purposes of irrigation as Dakin's fluid. Iodide of starch is prepared by mixing in a litre of boiling water 25 gm. of soluble starch and 50 c.c. of a 1 : 1000 solution of iodine in potassium iodide. This fluid, which contains in the litre 50 cgm. of iodine in a state of extreme division, is not irritating to the integuments, and has no effect on the linen or bedding. It is used in the same manner as Dakin's fluid, to which its antiseptic power is equal, while it is a much simpler preparation.

The Suppression of Iodism by Adrenalin.

Dr. Milian has succeeded in avoiding the unpleasant effects such as lacrymation, conjunctivitis, œdema of the lids, swelling of the face, and salivation, produced in many patients by the administration of potassium iodide. For this purpose he employs adrenalin, in a dose of 6 mgr. a day, in two doses. In several patients who showed complete iodide intolerance the symptoms disappeared in 24 hours and it was possible to continue treatment without provoking them afresh. He has used the same method to combat the reactions provoked by arsenobenzol.

Nov. 3rd.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Annual Meeting of Canadian Public Health Association.

The Prevalence of Venereal Diseases.—An outstanding discussion at the annual meeting of the Canadian Public Health Association, held in Ottawa on Sept. 27th and 28th, was opened by Captain Gordon Bates, C.A.M.C., Toronto, with a paper prepared in collaboration with Captain Morris McPhedran, C.A.M.C., and Captain Donald Fraser, C.A.M.C., upon the incidence of venereal disease. They contrasted the efficiency with which this menace is dealt with in the Army and the comparative indifference of civic authorities, pointing to the periodical inspection in the former, and the possibility of quarantine, a trustworthy weapon not to be obtained in civilian life. The paper outlined a recent investigation extending over four months, in which 417 cases were analysed, showing that 70 infected men were under 20 years of age, 144 between 20 and 25 years, some 260 being single men and 36 married. In 127 cases of infection there had been no payment of money to the woman, and only 44 women were classed as professional prostitutes. In the majority of the cases the women were working in poorly-paid occupations, such as domestics, sales-women, waitresses, and theatre ushers. In 256 cases the influence of alcohol was denied, and in 97 cases either the man or woman, or both, had indulged to excess. In 60 cases the infection took place in the girl's boarding-house, while in 119 cases infection took place out-of-doors. Emphasis was placed on the alarming prevalence of these diseases in almost every community in Canada; gonorrhœa was responsible for 10 per cent. of the blindness of the Dominion, many surgical operations were rendered necessary through it; many chronic diseases were caused by it. Syphilis was the cause of 35 per cent. of insanity in the country, while it was also one of the causes of mentally defective children. Diseases of the heart and blood-vessels were common sequelæ. Dr. Bates strongly urged that steps be taken immediately to facilitate early diagnosis and prompt treatment of all cases. Clinics, he said, should be established, not only in the large cities, but all over the country; treatment must not be prematurely discontinued; and early marriages, which often result in the innocent infection, must be safeguarded. Venereal diseases should be quarantined, and a law passed in Canada similar to that of Western Australia.

Immigration problems.—The first morning session of the eting was given over to a discussion on the various eases which the Army Medical Corps had to contend with all branches of Army life. The President of the Associa-n, Dr. J. D. Page, medical officer, Immigration Hospital, ebec City, dealt principally with the immigration oblems of Canada as compared with those of the United ates. He spoke of the more effective system in vogue in United States of holding responsible for the class of migrants brought to the country the steamship com-ies, whose proprietors were fined without discrimination. Canadian Government, he said, should recognise the essity of a Public Health Department, but they would y do so when public opinion proved strong enough to ig about the desired result, and the Canadian people l seemed to be very indifferent about public health ters, as was evidenced by the small audiences which nded any public health gathering. The present was the e to prepare for the immigration problems which would e themselves upon Canada stronger than ever after the e of the war.

Patent medicines and alcohol "medicines."—Dr. Charles . O. Hastings, medical officer of health of Toronto, said many "cures" on the market contained an excess of gs and alcohol, the latter particularly since prohibition gone into effect in most of the provinces of Canada. The umption and cancer "cures" which were being sold were ing the victims of the only chance they had of recovery. manufacturers of such concoctions were criminals of the t type. He advocated health insurance for Canada on plan adopted in England, and demanded that the adian Government should take immediate action.

Child Hygiene.—Dr. Alan Brown (Toronto), in charge of Child Hygiene Department of the Toronto Board of th, read a paper deploring the fact that Canadian ers did not do their duty in respect to maternal nursing. quoted statistics to prove that the women of the United s and many foreign women were 50 per cent. ahead of dian women in that respect. He considered that the had not yet shouldered its responsibility in this d. He pointed to the awakening of European countries the war and stated the British infant mortality had been reduced since 1915 by about 10 per cent. king of the beneficial effects of milk depôts and s, he pointed out that if such work was to be effective a national standpoint, a milk depôt should be estab-l for every 20,000 inhabitants.

The Need for Caution in Medical Journals.

ough the Assistant Director of Medical Services in ary District No. 2 (Toronto) the attention of those rned has been called to a breach of military etiquette has occurred. Heretofore, articles on medical and al topics connected with the war have been appearing ne of our medical journals. The medical officers who e authors of these papers have apparently been over-g the fact that, not only by the King's regulations and for the Army, but also by special orders issued by the Expeditionary Forces, of which the Canadian Expe-ary Force is a part, they are forbidden to communicate apers without securing in advance consent for publi-from the Director-General of Medical Services. In all articles on medical or surgical subjects connected he war must be submitted to that official.

Canadian Medical Officers for the War.

er the selective draft system of the Canadian Military e Act (1917) Canadian doctors of military age will be l into three classes according to their physical fitness: A, who would go overseas; Class B, who would be for duty probably in England or at one of the an camps; and Class C, who would serve on the of hospitals in Canada. Forty-eight years was the e age-limit for home service, and 45 years for service s. Physicians over age might be attached to an military hospitals as consultants. Recently the of Physicians and Surgeons of Ontario appointed a committee to take a census of the medical men in the e. This requires the names of all medical men, r of military age or not. The register of Ontario s the names of about 3100 physicians, and over 500 e are overseas or in service at home.

th.

Correspondence.

"Audi alteram partem."

THE DISTRIBUTION OF BLOOD IN TRAUMATIC SHOCK.

To the Editor of THE LANCET.

SIR,—At the present moment much attention is being paid to the study of traumatic shock. It has been commonly stated and apparently accepted by many that this condition is in some way connected with an accumulation of blood in the capacious splanchnic area. The acceptance of this conception has considerably affected the views of some workers on this question, and has probably influenced to some degree the attempts that have been made to elucidate the problem.

A statement of a considerable clinical experience may conceivably be of use at the present moment. We would, therefore, state that in the course of many hundreds of abdominal operations undertaken upon patients in all degrees of traumatic shock we have not found any primary splanchnic congestion to exist. When the abdominal contents have been exposed to an atmosphere for any prolonged period, or when inflammatory processes have been established, a secondary vascular dilatation exists, but we can see no ground for the assertion that a primary dilatation of blood-vessels in the splanchnic area occurs.

We are, Sir, yours faithfully,

CUTHBERT WALLACE,
JOHN FRASER,
Oct. 1st, 1917. HAMILTON DRUMMOND.

THE GERMICIDAL POWER OF FLAVINE.

To the Editor of THE LANCET.

SIR,—Commenting in your issue of Oct. 20th on my note on the germicidal potency of flavine, Dr. C. H. Browning mentions that comparisons with other antiseptics are not given. As a matter of fact, such comparisons were made in some instances, with the following results:—

Experiment 1 (Inhibitory power of flavine on development of *B. perfringens* group in milk).

Carbolic acid 1:666 = No growth.	Bacterol 1:1600 = No growth.
,, ,, 1:1000 = Growth.	,, 1:2000 = ,,
	,, 1:2660 = Growth.

Experiment 2 (Germicidal power of flavine on *Staphylococcus* in broth).

Carbolic acid 1:133 = No growth. (Not carried lower.)	Kerol 1:5000 = No growth.
	,, 1:10,000 = ,, (Not carried lower.)

Experiment 3 (Same as No. 2, substituting saline for broth).

Carbolic acid ... 1:133 = No growth.
,, ,, ... 1:200 = ,,
(Not carried lower.)

Experiment 6 (Pus).—Bacterol 1:200 = No growth (not carried lower).

Dr. Browning objects to the use of pus for disinfectant tests because: (1) it is inconstant in composition and the results obtained with it vary enormously, and (2) the surgeon does not treat infected wounds by mixing an antiseptic with the pus contained in them. Since my note was published I have tested another staphylococcic pus. Results:—

Flavine 1:500 = No growth.	Flavine 1:1000 = Growth.

My two experiments with pus indicate that flavine 1:1000 does not kill; Fleming states that the germicidal power of flavine on staphylococcic pus lies between 1:500 and 1:1000. Here, at any rate, are several fairly concordant experiments. With regard to Dr. Browning's second point, I might equally say that the surgeon does not use his antiseptic mixed with peptone water or serum—the media employed by Dr. Browning in his experiments. The fact is, of course, that any medium used is a compromise, and does not exactly reproduce the conditions obtaining in an infected wound. On the whole I should be inclined to place most reliance upon results obtained with pus, if possible taking a mean value for a number of tests.

I am, Sir, yours faithfully,

Chandos-street, Strand, Nov. 6th, 1917. R. TANNER HEWLETT.

NASO-PHARYNGEAL INFECTION AT THE ONSET OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—In an interesting communication to THE LANCET of Oct. 20th, in which they record the fact that of 26 men who subsequently developed cerebro-spinal fever all gave a negative naso-pharyngeal swab when examined from 2–65 days before the onset of the disease, Staff-Surgeon P. Fildes and Surgeon S. L. Baker express the opinion that this observation is not in harmony with a previous statement of mine upon this subject. This I venture to point out is a misunderstanding.

In summarising the observations which had been made by Captain M. W. Flack when acting as officer in charge of the London District Cerebro-spinal Laboratory, in the report to the Medical Research Committee to which they refer, I drew attention to the particularly careful investigation made by him of cases at the onset of the disease, and remarked that his detection of the meningococcus in the naso-pharynx of the patient at the onset of symptoms in practically all his cases—including instances where at this early stage of the attack the meningococcus was not to be obtained from the cerebro-spinal fluid—went to show that every case of cerebro-spinal fever was in reality an instance of a carrier developing the disease. By this I never meant it to be understood that the carrying of the meningococcus by the patient in his naso-pharynx had been of a *chronic* nature. Contrariwise, the evidence in Captain Flack's and Captain Tulloch's reports in the same volume, and the general experience, both before and since, in outbreaks among the military, is to the effect that it is comparatively rare for chronic carriers to develop the disease themselves.

The fact recorded by Staff-Surgeon Fildes and Surgeon Baker, so far from contravening the view I took, and take, of this matter, is what I have always suspected to be the case in, at any rate, a considerable proportion of those who contract the disease.—I am, Sir, yours faithfully,

Central C.S.F. Laboratory, Caxton-street, S.W., Oct. 20th, 1917. M. H. GORDON, Lieutenant-Colonel, R.A.M.C.

THE BIOLOGICAL ASPECTS OF WARFARE.

To the Editor of THE LANCET.

SIR,—Dr. Harry Campbell's articles on this subject in recent issues of THE LANCET are, as his articles are usually, in keeping with the best thought of our day, but he and others have considered too little the biological aspect of the present war. A valuable book by Dr. Chalmers Mitchell on Evolution and the War was published in 1915, and there was a short correspondence last autumn in the *Saturday Review* on Biological Necessity, as it presented itself to the German mind. But except for these I have seen little reference to the unscientific claim of German scientists that the war which the Germans forced upon the world was a matter of biological necessity, based upon the assumption that their particular empire must expand. This audacious claim of the professors is silent now, but it lies at the very root of the causes of the war. Now, either these State-paid men, learned more than wise, have badly learned their Darwinism, or they are more treacherous than their European colleagues were wont to think in pre-war times. I prefer to think that Prussian ignorance of the mind of the world around them has led to this claim, and that the crafty advisers of the Kaiser have availed themselves of the simplicity of tame professors. The plea of necessity is good enough for tyrants, but in the kingdom of nature there exists no necessity that one group of animals in their efforts to expand should trample down other groups. The struggle for food and mates is not between Carnivores and Ungulates, between Felidæ and Ursidæ, or Bovidæ and Equidæ, but between individuals of the same species, all the great groups living side by side in a state of armed neutrality. Pithecanthropus may be superseded by Eoanthropus, and Neanderthal man by modern man, during a whole geological period, and the Aztecs and Incas be overwhelmed in a few years by a handful of Spaniards; but such events afford not the slightest parallel to the biological necessity claimed by Germany. Though the Felidæ be at once the strongest, fiercest, and most cunning of the Carnivores they fo their existence depends on keeping to their habitat, a even in their own family circle the lions and leopards ha not crushed out the panthers and lynxes. But our Felide Europe set up some loud-voiced Treitschke, and on h authority declare to the world that now, and precisely 1914 of the Christian era, the time has come for them succeed where Charlemagne, Spain, and France failed; th Germanism shall now prevail—because it must! The answ of thirteen hundred millions of men to this claim of som hundred and fifty millions can surely be only that of Natur "not a word and a blow, but a blow alone." Indeed, t rest of the civilised world does not see the necessity that German Empire, as such, should exist at all.

I am, Sir, yours faithfully,

Nov. 4th, 1917. WALTER KIDD, M.D., F.R.S.E.

THE TREATMENT OF ENURESIS.

To the Editor of THE LANCET.

SIR,—Gradual dilatation of the bladder can usually effected in a much simpler manner than by using catheter. When the child wishes to micturate make it hold its water while sitting quietly in a chair. It may be at first only able to hold it for half a minute, but in two or three weeks the child can often do so for ten minutes. It means, of course, a great deal of trouble for the mother or nurse, but it saves all the objections to passing a catheter some what frequently, and will get the bladder accustomed to a full charge. I am, Sir, yours faithfully,

Ingatestone, Oct. 31st, 1917. SHEFFIELD NEAVE.

To the Editor of THE LANCET.

SIR,—The reference to a surgical method of treatment of enuresis tempts me to refer to a medical method which is not so well known, I think, as it might be. Dr. Edmund Cautley mentions that "mere change of surroundings, such as admission to a hospital ward, is sometimes sufficient to break the habit." The habit may also very frequently be broken by the administration of sulphonal. I give a dose of sulphonal, containing about 1 grain for each year of the child's life, every night for the first week, every other night for the second week, and every third night for the third week. In a considerable number of cases the child is permanently cured. There may be some return a few weeks or months later, when the treatment can be successfully repeated. In some cases in which administration of sulphonal is not successful, it has occurred to me that success might attend larger doses. Sulphonal, however, is a drug which one must use with caution. At one time I tried trional in its place, but the results were very disappointing.

I am, Sir, yours faithfully,

Norwich, Oct. 31st, 1917. THEODORE FISHER.

To the Editor of THE LANCET.

SIR,—The correspondence in your columns on the treatment of enuresis prompts me to point out that, so far as my personal experience is concerned, this condition, when not dependent on organic disease, is one of the most favourable for treatment by suggestion. As a rule hypnosis is not required and few treatments are necessary.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 31st, 1917. E. L. ASH.

CARDIAC DIGITAL PERCUSSION.

To the Editor of THE LANCET.

SIR,—I have read with very great interest the articles in THE LANCET of Oct. 20th, by Dr. W. Gordon and Dr. C. E. W. Bell, on the above subject, and I entirely agree with them as to the striking changes produced in digital cardiac dullness by change of posture from erect to recumbent. There is no doubt that the importance of percussion in the correct diagnosis of various cardiac conditions is not fully appreciated. It is not possible, in my opinion, to make a correct diagnosis of the state of a heart without the use of careful cardiac percussion, and if this percussion is only done in the recumbent position, it is equally impossible to arrive at a correct diagnosis as to the presence and degree of cardiac enlargement, especially enlargement due to dilatation of the auricles. Personally I always rely upon the deep cardiac dullness, as what is termed the "apex

al cardiac dullness" is variable and difficult to map out rectly, and therefore, as the authors of the article mention, no practical use. What is known as the "normal" diac dullness varies in almost every individual according he shape of the chest and the condition of the lungs; sequently every patient with a normal heart has a normal liac dullness of his own, though that dullness is always hin certain limits. When a patient is in the recumbent tion the area of cardiac dullness is decidedly reduced, as pared to that of the erect position, especially toward the t side; and it is therefore impossible to diagnose slight cular dilatation if the patient is only percussed in the ie position. This I believe to be the reason it is often looked. There is also no doubt, as the authors of the er state, that many medical men use faulty methods ercussion, and I fear this condition of things will rather ease than decrease as students are often taught to rely rely upon the polygraph or electrocardiograph and the ioscope for diagnostic purposes.

n more than one occasion I have drawn attention to the that medical men who attempt to make a full and rate diagnosis of a cardiac case entirely upon evidence ined by the aid of the electrocardiograph or the poly- h and the stethoscope, will fail to do so. The doctor wishes to make as accurate a diagnosis as possible must the polygraph, the sphygmomanometer, and the stetho-e, and must also percuss the heart out carefully, both in rect and prone position; if he fails to use one or more hese aids to diagnosis he will probably fail in his nosis.

I am, Sir, yours faithfully,

ley-street, W., Oct. 20th, 1917. LESLIE THORNE THORNE.

CESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

,—You are wrong in including me amongst those who only realised that the anti-tuberculosis methods were quate since the publication of the figures for 1916. In aper, "The Prevention and Treatment of Pulmonary rculosis," published in the *British Medical Journal* 12, I quoted Karl Pearson's statistical conclusions, n showed the steady retardation in the fall of the culosis death-rate since 1895. Professor Pearson kindly ht his diagrams up to 1915 for my book, "Pulmonary rculosis," published early this year, which confirmed evious conclusions.

am sure the general mechanism of the Edinburgh ne is sound enough, but I can no more think that it can ccessful without an efficient method of treatment than think a steam-engine of any use without steam.

I am, Sir, yours faithfully,

lin, Oct. 30th, 1917. W. M. CROFTON.

Dr. Crofton's letter placed him among those who saw present increased incidence of tuberculosis evidence lure in our anti-tuberculosis methods, but we expressed inion as to how long he had held this view.—ED. L.

WAR DEAFNESSES.

To the Editor of THE LANCET.

—In the current number of the *Journal of Laryngology, logy, and Otology* there is an article by Dr. W. Sohier t, a well-known New York oto-laryngologist at present g with the French Army, on "The Prevalence of Ear es and Diseases in the French Army," which merits the s attention of the British Army medical authorities. lling to the writer's experience the total number of n the evacuation hospitals of the *zone des armées* com- no fewer than 16 per cent. of ear cases, a number to, or greater than, the figure for ophthalmic disease. lition to these numbers, which naturally only include men who report sick, there are, it is estimated, still ning at the front at any period an equal number of who bear the loss of their hearing without complaint, s such cases as are severely wounded in other regions, whom on this account the ear injury is overlooked. ould be noted that while war injuries of the labyrinth ficult of treatment and of cure, such injuries as simple e of the tympanic membrane are easily and success- reated when promptly taken in hand by an expert. On the other hand, neglect or delay in attending to this inherently trifling injury entails the onset of suppuration of the middle ear with all its evil consequences. The fact is, as Dr. Bryant notes, that modern war exercises its evil influence more on the hearing organ than on any other special sense, and for that reason, therefore, modern armies ought to be equipped with a sufficient body of specialists to cope with this unlooked-for development. Unfortunately, this does not seem yet to be the case, for, as he says, with the English-speaking allies, the organisation of the special service of oto-rhino-laryngology is still very weak, and thus many men must be lost both to the Army and to civil life who might otherwise be saved.—I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 27th, 1917. DAN MCKENZIE.

A METHOD OF COLLECTING BLOOD SERUM.

To the Editor of THE LANCET.

SIR,—There is a simple and efficacious method of obtaining serum from blood which I have not seen referred to in the articles dealing with this matter in THE LANCET, and which in the absence of special apparatus can be easily carried out.

The blood is collected or run into a test-tube of ordinary size, 15 by 1·5 cm., to the amount of 2 or 3 c.c.; it is then allowed to clot in a sloping position. The sloped blood should extend as far along the side of the tube as possible so as to form a thin layer, and the tube should not be moved until the clot is firm, an hour or more, according to the temperature and other factors. The serum will sweat out in drops during the course of a few hours and run to the bottom of the tube, the clot finally drying down on the glass into a thin skin.

As a matter of laboratory routine where small amounts of blood are collected, as for the Wassermann reaction, and kept stored for a day or two before the test is carried out, this forms a most convenient method. It was shown me a year or two ago by Captain A. H. W. Caulfeild, C.A.M.C., and I have seldom known it fail to give a good supply of clear serum. My experience of blood sent by post in stout glass tubes, 12 × 1 cm., with rubber bungs, is that it arrives with a firm detached clot and an abundance of serum, which on standing a short time becomes perfectly clear. Presumably the shaking aids the detachment and shrinking of the clot in this case.—I am, Sir, yours faithfully,

T. H. C. BENIANS.

Prince of Wales's Hospital, Tottenham, N., Oct. 31st, 1917.

THE POSITION OF PRACTICE UNDER THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—The leading article in THE LANCET of Oct. 27th with this title was interesting reading. Despite all the pros and cons. I do not think that the Act has been a blessing to a majority of medical men on the panel. The great mistake has been made of giving our prescriptions to pharmaceutical chemists to use wholesale for their own benefit in prescribing over the counter. Formerly a medical man would charge from 2*s.* 6*d.* to 5*s.* (and more) for a prescription; now one panel patient can have for 5*s.* 6*d.* a year half a dozen prescriptions. This is a state of things which those of our parents, who, being in medical practice, spent a lot of money at the London hospitals for our training in their profession, could never have dreamed of. Last winter I was called to see a lad with a severe cough and cold, and this lad's uncle informed me he got a cough mixture from the chemist. On seeing the mixture I found it to be the prescription I give to my panel patients. Cases where pharmaceutical chemists have prescribed for the public, and by so doing have caused the proper time for scientific interference to be fatally put off, are known to all of us.—I am, Sir, yours faithfully,

Cheltenham, Oct. 29th, 1917. ARTHUR E. PRICE.

THE governors of the West Ham Municipal Central Secondary School propose to call the institution "The Lister School," to perpetuate the association of Lister with the borough.

THE University of Leeds has received with great regret the resignation by Professor A. S. Leyton of the Chair of Pathology and Bacteriology in the University, and has recorded its high appreciation of the valuable services rendered by him during his tenure of the chair.

Obituary.

SIR DAVID CALDWELL McVAIL, M.B., F.F.P.S. GLASG., HON. F.R.C.P. IREL.,

CONSULTING PHYSICIAN TO GLASGOW ROYAL INFIRMARY; LATE CROWN MEMBER FOR SCOTLAND OF THE GENERAL MEDICAL COUNCIL.

WE learn with regret of the death at his house in St. James's-terrace, Glasgow, on Sunday last, of Sir David Caldwell McVail, his illness, acute pneumonia, only having extended over two days.

David Caldwell McVail was born in Kilmarnock 72 years ago and received his education at Kilmarnock Academy. Deciding to enter the medical profession, after a brief period of apprenticeship to a druggist, he proceeded to Anderson's College, Glasgow, and later became an undergraduate at the University. He obtained the Licentiateship of the Royal Faculty and also of the Royal College of Physicians, Edinburgh, in 1866, graduating later in medicine at Glasgow University. On qualification he went into practice for a time in the country, but shortly returned to Glasgow, and in 1887, having been admitted in the meantime a Fellow of the Royal Faculty, took up the post of lecturer on physiology in Anderson's College. From this time forward he became a leader in medical circles in Glasgow, chiefly because of his wide interest in the reform of medical education and later in general university reform, but it must be remembered that he was also a sound and learned clinician. He was a protagonist in the movement which resulted in the passing of the present Scotch Universities Act, and was personally responsible for many of the prominent features of a piece of legislation whose result has been the foundation of chairs and lectureships and the general raising of the standards of teaching and examination in Scotland. After resigning the lectureship of physiology in Anderson's College he assisted in the founding of the Western Medical School, Glasgow, and held there the lectureship in the practice of medicine. He was appointed dispensary physician to the Western Infirmary, and later he became professor of clinical medicine in St. Mungo's College, and finally physician to the Royal Infirmary, Glasgow.

As a matter of course McVail was regarded by the Royal Faculty of Physicians and Surgeons of Glasgow as a typical representative of their interests and of the cause of medical education generally on the General Medical Council, and from 1886, when the new Medical Act came into existence, to 1888 he represented the Faculty at the Council board; but in 1892 he was appointed to the Council as Crown Representative for Scotland, a position which he held for 20 years by successive reappointments until 1912. His interest in the work of the Council was unflagging. As a member of the Executive Committee, of the Committees on the Pharmacopœia, on Public Health, and on the National Insurance Act, and as chairman of the Examination Committee, he made his strong and keen personality a prominent feature in all the deliberations of that body.

In 1910, in due recognition of distinguished public work, McVail received the honour of knighthood. He had been a member of the Glasgow University Court at the time of his death for nearly a quarter of a century, and since the outbreak of war has been regularly engaged in professional work at two of the Glasgow hospitals. His life may therefore be said to have been passed in promoting the progress and scientific interests of his calling, and he died with harness on his back.

Sir David McVail married the daughter of a prominent Newcastle journalist and is survived by his wife, one daughter, and one son, who is a surgeon in the Colonial Service in Singapore. He was succeeded on the General Medical Council by his brother, Dr. J. C. McVail, vice-chairman of the National Insurance Commissioners in Scotland.

THE LATE DR. EDMUND F. T. PRICE.—Dr. E. F. T. Price, of Edinburgh, who died suddenly on Oct. 27th while drilling with the Volunteers at Corstorphine, was son of the late Dr. A. G. Price, civil surgeon in the Indian Medical Service, and was educated in India, taking his degree at Edinburgh University. He had done much X ray work for the Red Cross during the war. Dr. Price leaves a widow, a daughter, and three sons, two of whom are on active service with the Royal Army Medical Corps.

THOMAS TILLYER WHIPHAM, M.A., M.D. OXON., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO ST. GEORGE'S HOSPITAL.

WE regret to announce the death, at his residence Fishleigh House, Hatherleigh, Devon, of Thomas Tillyer Whipham, consulting physician to St. George's Hospital and for many years in consulting practice in Grosvenor-street, London.

Thomas Tillyer Whipham was born in 1839, the son of a barrister of Lincoln's Inn, and was educated at Rugby, Oriel College, Oxford, and St. George's Hospital. At St. George's Hospital he held in succession all the medical teaching posts in the school, and was elected assistant physician in 1872. In 1877 he became full physician after an unusually short time of waiting for promotion, and he was for a considerable period dean of the medical school. No member of a hospital staff could have more endeared himself to students. He was the best type of teacher, courteous, impressive, clear, simple, but well equipped to his task ends. For years his demonstrations in clinical medicine were a feature in the training of the students at his hospital. He had charge especially of the throat department, and the notes of his experience in that capacity, published in the St. George's Hospital Reports, are those of a most careful clinician. In Volume VIII. of the same Reports will be found some interesting records from his pen of the early use of salicin and salicylic acid, and he contributed a few papers on laryngological topics to THE LANCET; but he wrote very little, and was only an infrequent speaker at the medical societies. He examined in medicine at Oxford and also at the English Conjoint Board, and served as Senior Censor to the Royal College of Physicians of London. He was also physician to the Legal and General Life Assurance Society and a member of the Court of Assistants of the Goldsmiths' Company. He was elected consulting physician to the hospital which he had served so well in 1897, and later retired from practice and went to live in the country, having always been a devoted adherent to county sport.

He married Florence, daughter of Mr. Charles Tanqueray, by whom he had one son, Dr. T. R. C. Whipham, physician to the Evelina Hospital for Children.

WALTER FOWLER, M.A., M.B., B.C. CANTAB., F.R.C.S. ENG., L.S.A. LOND.

THE death is announced at Bendigo, Australia, on July 26th, of Dr. Walter Fowler, at the age of 59. He was the son of the late Dr. Robert Fowler, of Bishopsgate-street and Old Burlington-street, London, and commenced his medical career by winning in 1876 the Tancred studentship in medicine, held at Gonville and Caius College, Cambridge. After graduating at Cambridge in Arts he proceeded to Guy's Hospital, from which medical school he qualified in 1883, afterwards holding the appointment of house surgeon. In 1884 he took the Fellowship of the Royal College of Surgeons of England, and in the following year commenced practice in Birmingham, being appointed surgical patient surgeon at the Queen's Hospital. On the death of his father in 1886 he returned to London to carry on the general practice in the City, holding an appointment also at the Central London Throat and Nose Hospital, where he assisted the late Mr. Lennox Browne. A breakdown in health led him to migrate to Australia, and after nine years' private practice in Echuca, Victoria, he was appointed resident medical officer to the Bendigo Hospital. Here his large surgical experience resulted in his becoming one of the leading surgeons of Victoria, and when ill-health forced him to retire in 1912 from the hospital, he was much missed as a kindly and efficient administrator.

In 1887 he married Alice M. Wacher, of Herne, Kent, who, with a family of two sons and one daughter, remain to mourn their loss.

ROYAL INSTITUTION.—A general meeting of the members of the Royal Institution was held on Nov. 5th, Sir James Crichton-Browne, the treasurer, being in the chair, when the special thanks of the members were voted to a lady member for an anonymous gift of £500 and to Richard Pearce for a donation of £100 to the Fund for Promotion of Experimental Research at Low Temperatures.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: A. McCallum, N. A. H. Barlow, M. H. Tupe, B. S. Collings, J. W. McK. Nicholl.

ARMY MEDICAL SERVICE.

Col. M. J. Sexton, C.B., is retained on the Active List under the provisions of Arts. 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

TERRITORIAL FORCE.

Capt. (temp. Major) C. M. Fegen to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. C. Connor, C.M.G., relinquishes the rank of temporary Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major C. H. Straton, Capt. H. Gibson.

The undermentioned Majors retain the acting rank of Lieutenant-Colonel whilst in command of a Casualty Clearing Station: T. F. Ritchie, D.S.O., E. W. Siberry.

Capt. J. B. A. Wigmore to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Temp. Major D. A. Whitton, Can. A.M.C., to be acting Lieutenant-Colonel while specially employed.

Temporary Lieutenants to be temporary Captains: H. Gooch, . Turner, J. L. Lawry, E. M. Fannin, A. L. Saunders, S. Potter, W. G. Johnson, S. P. Bedson, A. Chance, C. W. Macpherson, T. H. artin, M. J. Wilson, H. A. Whyte-Venables, M. R. V. Ford, C. J. R. offmeister, W. Rowat, A. W. Kendall, S. F. Fouracre, W. H. Duncan, J. B. Leney, S. F. Cheesman, M. J. Loftus, D. MacKinnon, W. J. homas, G. A. Crowe, G. C. Hartley, A. P. Piggot, C. Duncan, Clapperton, J. Goeghegan, C. T. M. Plowright, W. McAlpine, H. J. mson, M. H. Laslett, H. Goodale, J. R. Anderson, S. H. Ryan, R. W. irn, S. A. Owen, T. B. Sellors, F. J. Spilsbury, D. C. P. Taylor, J. N. Longridge, A. L. Saunders, H. C. Burbidge, E. V. Dunkley, Anderson.

M. Fisher, late temporary Captain, is granted the honorary rank Captain

Temp. Lieut. J. M. Ahern, late Surgeon Captain, Liverpool Regiment, to be temporary Captain.

. B. Lilly, late temporary Captain, is granted the honorary rank Captain.

Officers relinquishing their commissions: Temp. Capts. W. S. Allan, Lindsay, M. Polson, I. B. D'Oher, H. V. Drew, A. G. Bodman, J. I. inson, A. McC. Davidson, W. M. Will, J. B. Wood, J. F. McCracken, A.M.C., C. W. Anderson, Can.A.M.C. Temp. Lieuts. J. Anderson, R. J. Scarr, G. Sporiti, G. Elam, J. H. Stephens, W. Dunn, J. C. on, R. W. S. Walker, S. Hutchinson, F. Rogerson, C. Murphy, J. C. rray, W. J. Morrish, A. B. Ferguson, T. W. Walker, A. Spong, E. Macvie, G. M. B. Liddle, W. B. Harris, C. M. Keillor, T. G. ton, A. Falconer.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: G. K. E. Inman, J. K. R. Landells.

To be Lieutenants: Temp. Hon. Lieut. E. S. Phillips (from R.A.M.C.), D. Mackinnon (from Edinburgh University O.T.C.), E. J. Coombe, Gerry, R. F. C. H. Buchanan.

TERRITORIAL FORCE.

Capt. (temp. Major) C. M. Fegen to be seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. (temp. Major) C. M. Fegen to relinquish his temporary rank on relinquishment in posting, and to be restored to the establishment.

Capt. (temp. Major) G. A. Ewart relinquishes his temporary rank on relinquishment in posting, and is restored to the establishment.

Capt. A. C. O. Brown relinquishes his commission on account of ill-health.

Capt. G. L. L. Lawson to be temporary Major whilst in command of a Field Ambulance.

Capt. A. L. Flemming to be restored to the establishment.

Capt. H. H. Markham to be seconded for duty with a General Hospital.

Capt. L. A. Rowden, M.C., to be seconded for service with a General Hospital.

Capt. J. Pearson to be seconded for duty with a General Hospital.

Capt. W. I. Cumberlidge to be seconded for duty with a General Hospital.

Lieut. J. R. Clark to be Captain.

O. Scott, 11th Battalion, West Riding Volunteer Regiment, to be Honorary Lieutenant and Medical Officer.

TERRITORIAL FORCE RESERVE.

Capt. (temp. Major) W. Tyson, from R.A.M.C., to be Captain.

Capt. A. G. Williams, from R.A.M.C., to be Captain.

Colonel Sir William Boog Leishman, C.B., F.R.S., M.P., has been appointed a Knight of Grace, and Major Thomas Houston and Major Charles William Menelaus Wilkie Esquires of the Order of the Hospital of St. John of Jerusalem in England.

At the annual meeting of the Society of Members of the Royal College of Surgeons of England held on Thursday, 30th inst. note was taken of the rejection by the College Council of the proposal made by the society not to hold this year the usual annual general meeting of Fellows and Members, in view of the fact that many of them are absent on war service or busily engaged at home. It was unanimously decided to submit no resolution at the College meeting in November and to make no attempt to attend the meeting or to obtain a quorum there.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. E. J. Kerr, Australian A.M.C.

Major G. R. C. Clarke, Australian A.M.C., qualified at Sydney in 1902, and was in practice at Wahroonga, New South Wales, prior to joining the Expeditionary Force.

Died of Wounds.

Capt. A. Z. Philips, R.A.M.C., qualified at Edinburgh in 1910, and held appointments at the Royal Southern Hospital and at the Children's Infirmary, Liverpool, at the Scarborough Hospital and Dispensary, at the Park Hospital for Children, Hither Green, Lewisham, and at the Florence Fiennes Hospital, Dunkirk.

Capt. D. J. S. Stephen, M.C., R.A.M.C., qualified at Aberdeen in 1910, and held appointments at the County Hospital and at The Lawn Asylum, Lincoln. He was in practice at Lincoln before joining the R.A.M.C. The award of the Military Cross was recorded in THE LANCET of July 31st, 1915, p. 257.

Capt. W. G. McConnell, R.A.M.C., qualified in Ireland in 1915, and joined up shortly afterwards.

Capt. W. Morrison, M.C., R.A.M.C., qualified at Edinburgh in 1909, and shortly afterwards joined the West African Medical Service. The award of the Military Cross was recorded in THE LANCET of Dec. 2nd, 1916, p. 958.

Wounded.

Capt. S. R. Gleed, R.A.M.C., attached Durham L.I.
Lieut. A. P. Draper, R.A.M.C., attached Lancashire Fusiliers.
Capt. R. D. Nasmyth, R.A.M.C.
Major W. R. Craig, Australian A.M.C.
Capt. P. S. Parkinson, Australian A.M.C.
Capt. J. Arthur, R.A.M.C.
Lieut. G. E. Lloyd, M.C., R.A.M.C.
Capt. W. J. Nisbet, R.A.M.C.
Capt. R. W. Ryan, R.A.M.C.
Surg. R. G. Morgan, R.N.
Surg. J. N. McB. Ross, M.C., R.N.
Capt. P. MacCullum, M.C., R.A.M.C.
Capt. W. Steadman, R.A.M.C.
Capt. H. C. Watson, R.A.M.C.
Lieut. L. N. Morris, R.A.M.C.
Major T. J. Frizell, Australian A.M.C.
Major T. M. Furber, Australian A.M.C.
Major H. Buck, M.C., Canadian A.M.C.
Surg. W. P. Starforth, R.N.
Lieut. E. H. Good, R.A.M.C.
Capt. W. R. Addis, R.A.M.C.
Lieut.-Col. H. Fulton, R.A.M.C.
Capt. K. A. MacCuish, Canadian, A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. H. G. Turrell, Oxford and Bucks L.I., died of wounds, only son of Dr. W. J. Turrell, Oxford.

Lieut. F. K. Holton, Middlesex Regiment, killed in action, only son of Dr. F. W. P. Holton, Barking-road, London.

MENTIONED IN DESPATCHES.

In a despatch from Simla, dated July 23rd, 1917, dealing with military operations in the Indian Empire from March 10th, 1916, to March 31st, 1917, the names of the following medical officers are mentioned:—

Major C. E. W. S. Fawcett, R.A.M.C.; Lieut. B. S. Dhondy, I.M.S.; Capt. J. B. Hanafin, I.M.S.; Major D. Heron, I.M.S.; Capt. M. A. Rahman, I.M.S.

FOREIGN DECORATIONS.

Japanese.

Order of the Sacred Treasure, 1st Class.—Surg.-Gen. Sir A. W. May, K.C.B., K.H.P.

French.

Croix de Guerre.—Fleet-Surg. J. R. Muir, R.N.; Staff-Surg. W. T. Haydon, R.N.; Surg. H. E. R. Stephens, R.N.; Surg. R. G. Lyster, R.N.; Surg. H. P. Margetts, R.N.

OBITUARY OF THE WAR.

ROBERT HAIG SPITTAL, M.B., CH.B. ABERD.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. H. Spittal, who was killed in action on Oct. 4th, was born at Ellon, Aberdeenshire, where his father was schoolmaster. Educated at Gordon's College, Aberdeen, and at Aberdeen University, where he obtained distinction in anatomy, he graduated M.B., Ch.B. in 1905. After a period as demonstrator of anatomy and as house surgeon at the Sick Children's Hospital, he left Aberdeen and settled in general practice first at Whaley Bridge, near Stockport, and then at Denton, joining Dr. John Murray in partnership at South Bank, Yorkshire, in 1912. On the outbreak of war he volunteered for service in the Royal Army Medical Corps, and was sent to Serbia, where he received the Order of St. Sara, 5th Class. After seeing service in Egypt and Malta, he was attached to a regiment in France, and remained there until his death. His partner writes of Captain Spittal as a man with a reserved manner, which did not prevent his kind and sympathetic nature becoming known to a wide circle of friends. He was a keen golfer.



ROBERT STERLING, M.A., M.B. DURH.,

CLERK IN HOLY ORDERS;
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. Sterling, who recently died in a nursing home in London, was ordained in 1884 and took his medical degree three years later. After serving in two curacies he went to Gaza in 1892 to take charge of the hospital belonging to the Church Missionary Society. He was there when Turkey declared war in 1914, and after being kept as a hostage for a while was sent home from Jerusalem at the end of the year. On reaching England he obtained a commission in the R.A.M.C. and was sent to Egypt, where he remained until the early part of this year, when he was invalided home with an internal malady from the effects of which he died. Captain Sterling took a deep interest in the future of the Holy Land and would have warmly welcomed the fall of Gaza. At El Arish he opened and maintained a school and a dispensary for the benefit of the villagers. His popularity at Gaza resulted in the presentation of a cheque from the leading Moslems of the town as a token of their gratitude. Captain Sterling was honorary canon of St. George's, Jerusalem.



BENJAMIN ALLEN BULL, L.M.S.S.A.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain B. A. Bull, who was killed in action on Sept. 16th at the age of 30 years, was only surviving son of Professor Bull, of Manchester. He was educated at Rydal Mount, Colwyn Bay, and at Jesus College, Oxford, obtaining first-class honours in Mathematical Moderations and a first class in the Final Honour School of Physiology. When war broke out he was a student at St. Bartholomew's Hospital. Offering his services to the Navy he acted for four months as surgeon probationer on the *Lysander*, returning to take his medical qualification in 1915. He then obtained a commission in the R.A.M.C. attached to a Home Counties Field Ambulance, and early this year went out to France with a battalion of the London Regiment. He was killed by a shell which burst outside his aid-post as he was tending a wounded man. Letters from fellow officers allude to Captain Bull's cheery spirit and devotion to duty; he had a gift of humour which was caustic without wounding, combined with a keen enjoyment of life. At Oxford he took a special interest in the problems of diabetes and read widely on the subject, so that his professor anticipated distinction for him if he had lived to follow up this work.



FREDERICK CHARLES DAVIES, M.A., M.B. CAMB., M.R.C.P.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain F. C. Davies, who was killed in action in France on Oct. 17th at the age of 33 years, was youngest son of William Davies, J.P., first mayor of Battersea. Educated at St. Paul's School, London, and Downing College, Cambridge, he completed his medical course at Charing Cross Hospital, qualifying in 1908 and holding house appointments there and at the West Ham Isolation Fever Hospital. In 1912 he became medical registrar to Charing Cross Hospital and later county tuberculosis officer for Cambridgeshire. He went to France early in August, 1914, was invalided home with typhoid fever a year later, and was then appointed registrar to a base hospital. Latterly he was attached as medical officer to the Northumberland Fusiliers, with whom he met his death.

A medical friend writes of Captain Davies: "He endeared himself to his friends by his engaging manner and kindly disposition. He was an indefatigable worker on any subject he was interested in, and there is no doubt that had he lived he would have attained a high position in his profession."



MEDICAL RE-EXAMINATION OF MEN FOR THE ARMY.

The Local Government Board have issued circulars addressed to local tribunals (R. 154) and appeal tribunals (R. 155) to guide them in regard to the medical re-examination of men who find themselves aggrieved by their grading under the new scheme of the Ministry of National Service. A six-page pamphlet of rules (R. 156) accompanies the circulars. Briefly, the rules provide that any man may apply to the Appeal Tribunal, within the stipulated time, against his grading by the National Service Medical Board, or, if he has applied to the board for a re-examination and been refused, against that refusal. If the Appeal Tribunal are satisfied that he has made out a sufficient case they may authorise him to be re-examined by their medical assessors.

MINISTRY OF NATIONAL SERVICE: ADVISORY BOARD FOR SCOTLAND.

The Minister of National Service has appointed an Advisory Medical Board for Scotland to assist him on matters relating to the examination of men of military age by the new medical boards, and the Secretary for Scotland will refer to the same board questions submitted by the medical assessors appointed by him. The members of the board are as follows:—Sir Donald Macalister, Dr. R. C. Buist, Dr. J. R. Fraser, Dr. John Gordon, Professor Harvey Littlejohn, Professor T. K. Monro, and Dr. John Playfair.

THE AUXILIARY R.A.M.C. FUND.—The committee announce that the following amounts have been received for these funds during the quarter ending Sept. 30th.

Benevolent Officers' Branch, £249 7*s.* 3*d.*
Relief Branch, Wt. O., N.C.O.'s, and men, £1067 7*s.* 3*d.*

THE TREATMENT OF DISABLED SOLDIERS IN WALES.

Sir A. Griffith-Boscawen stated in Parliament last week that the 176 institutions, including military, auxiliary, and civil hospitals and convalescent homes, were in use in Wales and Monmouthshire, and open to the treatment of discharged disabled soldiers, and the Joint Disablement Committees set up by the Local War Pensions Committees and the Ministry have been invited to submit proposals for meeting any deficiencies in this respect. Schemes for establishing an after-care colony with training for tuberculosis and one at least one centre for orthopædic treatment are under consideration. With regard to training, schemes have been sanctioned for cinema operating at Cardiff, cabinet-making and toy-making at Trefnant, horticulture and market gardening at Wrexham Garden Village. Diamond-cutting and polishing will, it is hoped, shortly established at Wrexham, and it is proposed to start a number of courses in various subjects at Cardiff. The western principality does not seem to lag behind in its care for the sick and disabled soldier.

URBAN VITAL STATISTICS.

(Week ended Nov. 3rd, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 12·6, against 12·0 per 1000 in each of the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 13·0, or 0·2 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 4·5 in Eastbourne, 5·2 in Carlisle, and in Hornsey, to 19·9 in Middlesbrough, 20·9 in Stockton-on-Tees, and 21·7 in Brighton. The principal epidemic diseases caused 291 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 90 from infantile diarrhœa, 60 from diphtheria, 56 from measles, 43 from whooping-cough, 14 from scarlet fever, and 4 from enteric fever. The deaths from diarrhœa, which had declined from 278 to 121 in the three preceding weeks, further fell to 114, and included 35 in London, 10 in Liverpool, 6 in Birmingham, and 5 each in Leicester and Manchester. The 1189 cases of scarlet fever and 1409 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 95 and 52 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the towns 153 resulted from violence. The causes of 34 deaths were not certified, of which 7 were registered in Birmingham and 4 each in Portsmouth, Liverpool, and Rochdale.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 12·3, against 12·1 and 11·4 per 1000 in the two preceding weeks. The 255 deaths in Glasgow corresponded to an annual rate of 11·9 per 1000, and included 9 from diphtheria, 5 from whooping-cough, 4 each from measles and infantile diarrhœa, and 1 from scarlet fever. The 97 deaths in Edinburgh were equal to a rate of 15·2 per 1000, and included 3 each from whooping-cough and diphtheria and 1 from diarrhœa.

Irish Towns.—The 118 deaths in Dublin corresponded to an annual rate of 15·4, or 4·4 per 1000 in excess of that recorded in the previous week, and included 6 from infantile diarrhœa, 3 from measles, and 1 from diphtheria. The 94 deaths in Belfast were equal to a rate of 17·1 per 1000, and included 6 from infantile diarrhœa and 1 each from enteric fever, scarlet fever, and whooping-cough.

THE DISAPPEARANCE OF GLANDERS.—

A report of Birmingham corporation states that although possibly there may be some increase of glanders after the war, nevertheless, under the present regulations and modern efficacy in diagnosis, the final extermination of this dangerous disease will not probably be long deferred.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination, held from Oct. 9th to 24th, the following candidates were successful in the subjects indicated:—

Medicine.—C. W. W. Armstrong, Guy's; K. E. Attenborough, St. Mary's; R. W. C. Ball, Middlesex; E. R. Batho, St. Bartholomew's; P. F. Bishop, Cambridge and St. Thomas's; J. C. Blake, University College; R. B. Britton, Bristol; Ellinor Marjorie Burnett, Royal Free; G. T. Calthrop, Cambridge and London; W. B. Christopherson, St. Bartholomew's; C. B. Cohen, Cambridge and St. Thomas's; W. Collins, Sheffield; B. S. Cornell, Toronto; T. L. Crawhall, Cambridge and Durham; J. K. Datta, Calcutta; A. R. Doyle, Guy's; F. N. V. Dyer, Cambridge and St. Thomas's; S. D. A. El Daab, Cairo and St. Bartholomew's; A. A. H. El Zeneiny, London; J. T. T. Forbes, W. Gover, and W. H. Grace, Guy's; A. S. Green, University College; N. B. de M. Greenstreet, Cambridge and St. Thomas's; W. S. Gross, Cambridge and St. George's; C. W. Hayward, University College; C. B. Henry, Westminster; A. G. Hewer, Middlesex; H. A. Hill, Birmingham; R. Hilliard, London; C. P. Hines, St. George's; E. A. Holmes, King's College; J. Hope, Manchester; H. B. Jackson, Cambridge and St. Bartholomew's; M. Jackson, St. Bartholomew's; D. M. Jones, London; J. W. Jones, Middlesex; G. S. L. Kemp, Sheffield; D. M. Lala, King's College; F. W. M. Lamb, Birmingham; A. W. Lewis and G. E. MacAlevey, St. Mary's; J. T. C. McAuslin, Edinburgh; Malati Madgavkar, Birmingham; G. Meadows, Guy's; Daisy Kathleen Fairbairn Michael, Madras and Charing Cross; H. Morrison, Cambridge and St. Bartholomew's; G. E. Mullins, Birmingham; P. M. Neighbour, Cambridge and St. George's; J. Nel, Charing Cross; Freda Newman, Durham; E. Nissim, University College; E. J. Papenfus, St. Thomas's; W. H. Parr, London; A. L. S. Payne, Guy's; H. T. Prys-Jones, Cardiff and St. Mary's; D. C. Rennie, Birmingham; R. T. F. D. Roberts, Guy's; Gwendolen Mary Rolfe, Royal Free; P. Rustim, Bombay; A. R. Sami, St. Thomas's; G. A. S. Shacklock, Guy's; B. B. Sharp, St. Bartholomew's; G. H. Sims, St. Thomas's; P. W. Symons, Middlesex; G. B. Tarring, Oxford and Guy's; Edith Marjorie Thom, Cardiff and Royal Free; N. B. Thomas, St. Bartholomew's; W. S. Tunbridge, Oxford and St. Bartholomew's; W. R. Tutt, Toronto; M. D. Vint, Cambridge and London; P. H. Williams, St. George's; S. A. Withers, Guy's; and S. T. Wong, Guy's.

Surgery.—C. C. Beney, Cambridge and London; Ursula Poussett Blackwell, Royal Free; J. D'A. Champney, Bristol; W. Collins, Sheffield; B. S. Cornell, Toronto; C. G. S. Corner, Madras and University College; H. Corsi, Cambridge and St. Bartholomew's; T. L. Crawhall, Cambridge and Durham; F. B. Dutton, St. Thomas's; H. V. Edwards, Cambridge and St. George's; A. F. M. Fuoss and H. A. Hill, Birmingham; J. Hope, Manchester; R. M. Humphreys, Oxford and St. Thomas's; N. E. F. Kemm, Bristol; F. W. M. Lamb, Birmingham; G. B. Lowe, Cambridge and Birmingham; J. T. C. McAuslin, Edinburgh; E. J. Papenfus, St. Thomas's; A. V. Pegge, Cambridge and St. Bartholomew's; D. C. Rennie, Birmingham; W. M. Savery, Middlesex; C. K. Scales King's College; G. H. Sims, St. Thomas's; G. K. Stone, Oxford and St. Bartholomew's; E. B. Verney, Cambridge and St. Bartholomew's; and W. Worger, Bristol.

Midwifery.—Y. Abdel Messiah, Middlesex; J. F. Adams, Toronto; N. D. Ball, University College; L. S. Banes, St. Mary's; H. F. G. Berncastle, Guy's; H. Black, Toronto; M. C. Breese, Westminster; J. Brodetsky, London; W. E. Brown, Toronto; T. A. Butcher, University College; J. D. Byrd, Manchester and St. Bartholomew's; F. Cavers, University College; A. E. Clark-Kennedy, Cambridge and London; A. E. Collie, Cambridge and Middlesex; H. C. Cox, St. Bartholomew's; H. T. Cubbon, Cambridge and St. Thomas's; P. C. Datta, Edinburgh; I. Davies, Westminster; W. Davies, London; L. S. Debenham, Guy's; H. V. Edwards, Cambridge and St. George's; C. F. Eminson, Charing Cross; P. Feraci, Middlesex; G. H. FitzGerald, Guy's; H. P. Gabb, University College; C. Gill-Carey, Guy's; B. A. M. Gordon, London; Gwenvron Mary Griffiths, Royal Free; W. R. G. Harris, London; M. S. Hashish, St. Bartholomew's; W. E. Heath, Cambridge and St. Bartholomew's; C. L. Hewer, St. Bartholomew's; F. R. G. Hief and J. M. Higginton, Cambridge and St. Thomas's; C. P. Hines, St. George's; E. S. Jones, Birmingham; A. M. Kazim, University College; G. S. L. Kemp, Sheffield; E. F. Kerby, Guy's; A. O. Knight, Middlesex; H. J. Levieseur and A. K. D. Lewis, Guy's; G. S. Lewis, Bristol; S. S. Lindsay, St. Thomas's; N. H. Little, Toronto; J. J. M. MacDonnell St. Thomas's; J. A. Mackenzie, Manitoba; E. K. Maclellan, Dalhousie; Gladys Matthews, Royal Free; Daisy Kathleen Fairbairn Michael, Charing Cross; E. Miller, Cambridge and London; L. M. Moody, King's College; J. W. W. Newsome, Middlesex; Esther Novinsky, Royal Free; A. A. Osman, Guy's; Marguerite Henrietta Pam, St. Mary's; E. R. Peirce, Birmingham; J. Peter, Middlesex; L. D. Porteous, St. Bartholomew's; Mary Millicent Prior, St. Mary's; P. W. Putnam, Cambridge and London; P. G. Quinton and W. E. K. A. Quitmann, University College; Constance Amy Randall, Royal Free; R. H. Reece St. Bartholomew's; F. W. Reitz, Guy's; C. E. Rice, Cambridge and Birmingham; J. S. L. Roberts, University College; J. S. Rogers, King's College; C. C. Rowland and S. N. Sennett, London; A. G. Shurlock, Cambridge and St. Bartholomew's; W. H. Simmons, Guy's; G. J. Sophianopoulos, St. Bartholomew's; Frances Minnie Spickett, Royal Free; V. A. T. Spong, St. Bartholomew's; G. McK. Thomas, Guy's; G. E. Tilsley, Bristol; E. S. Toogood, Oxford and University College; W. R. Tutt, Toronto; J. E. de V. van der Merwe, Guy's; E. B. Verney, Cambridge and St. Bartholomew's; D. Wallice, Cambridge and London; J. P. Wells, Cambridge and St. Bartholomew's; A. T. Westlake, St. Bartholomew's; S. C. de S. Wijeyeratne, University College; H. E. Williams, London; H. P. Williams, Liverpool; J. M. Winnett, London; F. G. Wood, Cambridge and St. Thomas's; and V. D. Wyborn, Charing Cross.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—A Comitia was held on Oct. 25th, Sir Frederick Taylor, the President, being in the chair.—On the report of the Censors' Board the following candidates were admitted as Members: Dr. J. J. Conybeare, Dr. D. E. Fenwick, Dr. J. G. Greenfield, Dr. Helen M. M. Mackay, Dr. W. S. Sharpe, and Dr. J. C. Tull.—Eighty-nine candidates having conformed to the by-laws and regulations and passed the required examinations were granted licences to practise physic.—A report from the Committee of Management was adopted detailing a revision of the regulations relating to the Preliminary Examination in General Education.—Sir Dyce Duckworth was re-elected as the representative of the College upon the governing body of the University of Liverpool.—The Registrar proposed for the first time the following temporary by-law:—

That Dr. J. T. Calvert, who is resident in India, and Dr. Carey F. Coombs and Dr. Charles Singer, both of whom are detained abroad by military duties, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.

—A report from the Committee of Management, dated Oct. 2nd, was adopted as follows:—

1. That the following schools be added to the list of institutions recognised by the Board for instruction in chemistry and physics—namely, King Edward VII. Grammar School, Southampton; Lancing College.

3. The Committee recommend that the following school, which is already recognised for chemistry and physics, be also recognised for instruction in biology—namely, Bootham School, York.

—Dr. J. A. Ormerod was re-elected a member of the Committee of Management.—The President reported on the proceedings of the Committee of Reference during the past six months, and received the thanks of the College for his work on that committee.—The books and other publications presented to the College during the past quarter were submitted to the Comitia and thanks returned to the donors. After certain formal business the President dissolved the Comitia.

MATERNITY AND CHILD WELFARE.—In connexion with an exhibition on "Life-Saving in War-Time," held in the Belfast Municipal Library and Museum, the first of a series of lectures was delivered by Sir John Byers, on Oct. 23rd, the subject being "The Problem of Maternal and Child Welfare."

OPHTHALMIA NEONATORUM AND LOCAL AUTHORITIES.—In reply to a question in the House of Commons, Mr. Hayes Fisher, President of the Local Government Board, stated that it was the policy of the Board to press upon local authorities the great importance of arranging for hospital beds for infants suffering from ophthalmia neonatorum along with their mothers. Several of the larger local authorities had already made such arrangements. In the case of London the Metropolitan Asylums Board was prepared to provide two hospitals—one to serve the north of London and the other the south. Mr. Fisher added that 50 per cent. of approved expenditure under this head is repaid by the Board to local authorities out of the maternity and child-welfare grant, the grant being also available in aid of home nursing.

DONATIONS AND BEQUESTS.—The late Mr. George Gill, of Walsall, has left by will £1000 each to the Walsall and District Hospital and to the Walsall Victoria Nursing Institution.—By the will of Mr. Edward Sturdy, of Teddington, the testator has left £500 to the Royal Victoria Hospital, Bournemouth, and £200 each to the London Hospital and Queen Mary's Convalescent Hospital, Roehampton.—By the will of the late Mr. John Henry Welby the Charing Cross Hospital, the Royal Free Hospital, the London Hospital, and the Westminster Hospital will each receive £250.—The late Mr. Henry Woodward, of Shawclough, Rochdale, has left £500 each to Rochdale Infirmary and the Rochdale Memorial Home for Crippled Children.

A NATIONAL MEDICAL SERVICE FOR IRELAND.—At a recent meeting of the Irish Medical Committee a subcommittee to watch the interests of the Irish medical profession was appointed, and the secretaries and the chairman, Dr. R. J. Johnstone, were directed to communicate with the secretary of the Irish Convention to inform him of the attitude of their constituency regarding the establishment of a National Medical Service. In 1911 over 90 per cent. of the profession in Ireland declared in favour of the reform of Poor-law and other medical services in Ireland on the following lines: (1) A National Medical Service entered by examination, payment by the State of adequate salaries progressive according to service, and compulsory superannuation on retirement; (2) the establishment of a properly organised Public Health Service; (3) a system of hospitals accessible to all requiring treatment free from workhouse or pauper taint. The question of medical attendance on private patients in these hospitals should, it was pointed out, receive special consideration.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance.

Sir E. CORNWALL has presented a Bill in the House of Commons "to amend the Acts relating to National Health Insurance." It has been read a first time.

Select Committee on Medical Examinations.

The Select Committee of the House of Commons, which was appointed to inquire into the subject of medical examinations and re examinations under the Military Service Acts, has resumed its sittings. At its meeting on Tuesday, Nov. 6th, at which Colonel GRETTON presided, Dr. JAMES GALLOWAY again gave evidence. He has been asked to undertake the duties of Chief Commissioner of Medical Service. He explained at length the new arrangements regarding the establishment of the ten recruiting areas, in each of which there was a Deputy Commissioner of Medical Service acting under the Chief Commissioner. The new medical boards that were being set up were composed of civilian medical practitioners, and in the great majority of cases the policy of the Ministry of National Service was to employ as part-time officers civilian practitioners actually at work in the area. Full facilities were to be placed at the disposal of men who desired to be re-examined. He expressed the view that the new system would simplify classification of recruits.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 31ST.

Medical Examinations for the Army.

In reply to Mr. WATT, Mr. MACPHERSON (Under Secretary for War) said: The honourable Member is right in suggesting that some men with only one eye have been passed for the lower categories of combatant service in the Army, those known as B 1 and C 1, but none of these are now being passed for any category of combatant service. At the present time men who have lost the sight of one eye, if otherwise fit, are passed only for one or other of the auxiliary services of the Army.

Soldiers Suffering from Nerve-Strain.

Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) informed Mr. KING that the policy was to retain in the Army all cases of soldiers suffering from nerve-strain who were likely to be categorised as fit for some form of military duty. Those likely not to be so fit were retained until they could be transferred to the Pensions Ministry. He was not aware of any proposal to recall for treatment under military control soldiers invalided through nerve-strain who had been already discharged from the Army.

Mr. KING asked whether instructions had been given to local committees to provide appropriate convalescent homes for ex-soldiers suffering from nerve-strain who had been discharged unrecovered to their homes.—Sir A. GRIFFITH-BOSCAWEN replied: Local War Pensions Committees are empowered to provide convalescent treatment for discharged disabled men whatever the nature of their disablement. The policy of providing special institutions for the class referred to, except in so far as they are suffering from neurasthenia in a severe form and are in need of special medical treatment, is, in the opinion of my advisers, open to serious question. The provision of convalescent homes generally is, however, stated to be inadequate in certain districts, and I am instituting inquiry into the matter with a view to remedying the deficiency where it exists.

Grants in Aid to Voluntary Hospitals.

Sir W. COLLINS asked the Financial Secretary to the War Office whether, in view of the increases in price of food, fuel, drugs, &c., since the amount of the grants-in-aid to voluntary hospitals in respect of the treatment of wounded soldiers was fixed, it was proposed to raise the scale of such grants to these institutions.—Mr. FORSTER wrote in reply: Yes, Sir, this point has been under consideration for some time, and an announcement will shortly be made.

THURSDAY, NOV. 1ST.

Treatment of Disabled Soldiers.

Mr. ANDERSON asked the Parliamentary Secretary to the Ministry of Pensions whether he was considering how to provide curative treatment on scientific lines for all sailors and soldiers suffering from rheumatism and tuberculosis; and whether he would consider the desirability of making grants so that, in addition to their pension, they might reside in health institutions under the care of specialists until every effort toward cure was made, seeing that this would, even in the monetary sense, be cheaper than to grant them pensions

hilst at the same time allowing them to lapse into chronic ıvalids.—Sir A. GRIFFITH-BOSCAWEN answered: Under ıe instructions of the Ministry, Local War Pensions Com- ittees have full powers to make arrangements with any isting institutions for the treatment of rheumatism, and ıose powers have been widely used. Should it be found that isting accommodation is insufficient, the Minister is ready give assistance towards meeting the need. Treatment for ıberculosis is provided by the National Health Insurance ommissioners in conjunction with the local health authori- es. In order that the disabled man may obtain the fullest lvantage of their arrangements grants have been made to ısist the funds of Insurance Committees and, in addition, ıe Minister has undertaken to provide the whole cost of eatment for advanced cases of this disease. Moreover, the inistry are at present considering the question of pro- ding after-care colonies where treatment and training may given in cases of this disease in its early stages. The ıourable Member may rest assured that every means ıssible will be adopted to bring about an effective cure herever cure is possible.

Ministry of National Service and Medical Examinations.

Sir H. GREENWOOD asked the Minister of National rvice what part of the Army Medical Services now ıder the War Office his department intended to take over. Sir A. GEDDES answered: The Ministry of National rvice has taken over from to-day that part of the functions the Army Medical Service which is concerned with the edical examination of the physical fitness of recruits and tential recruits. The responsibility of the Army Medical rvice for the performance of these functions passes com- etely to the Ministry of National Service. Civilian medical actitioners who have been employed on recruiting medical ards will, however, be eligible for re-employment under ıtional Service.

Civilian Medical Men and Army Work.

Mr. PERKINS asked the Under Secretary for War whether ery effort was made to utilise the services of those retired ilian medical men who would be willing to work as civil rgeons or to join the Royal Army Medical Corps provided at they could be employed at home in hospitals within ıch of their own homes but who for personal or domestic ısons could not break up their homes in order to serve in ıer localities.—Mr. MACPHERSON wrote in reply: The ıployment of civilian medical men willing to work as ilian medical practitioners in the neighbourhood of their mes is one for general officers commanding in chief of the rious commands. So far as the War Office is concerned ch offers are welcomed.

MONDAY, NOV. 5TH.

Criminal Law Amendment Bill.

Mr. RAMSAY MACDONALD asked the Home Secretary ether, in view of the state of public business and the likelihood of any progress being made with the Criminal w Amendment Bill this session, he would consider whether could use his powers under the Defence of the Realm Act otherwise to provide safeguards against the worst dangers which soldiers were beset and the grossest carelessness in nmunicating disease.—Sir G. CAVE replied: I regret the position to the Criminal Law Amendment Bill, the passage which would, in my opinion, reduce the evil referred to in question. It is for the Army Council to consider whether thing can be effected by a Regulation under the Defence the Realm Act.

The Course of Instruction in the Royal Army Medical Corps.

Replying to Major DAVID DAVIES, Mr. MACPHERSON wrote: dical men commissioned as officers in the Royal Army dical Corps undergo a short course of instruction in their itary duties, and much importance is attached to this ining, which is not confined to drill, but includes military itation, anti-gas protection, and the duties of a medical cer with troops in the field. It is not proposed to abolish special training, which is considered essential to the ciency of the officers concerned.

Hospitals for Venereal Disease.

Mr. ARNOLD WARD asked the Under Secretary for War ether military hospitals for venereal disease were being ated in or near urban districts in the Eastern Command; ether the local authorities had protested against this action; whether in such cases regard would be had to the wishes the local residents.—Mr. MACPHERSON wrote in reply: concentration of patients suffering from venereal eases in special hospitals under expert treatment ensures utmost advantage to health and the speedy return of men luty. The location of such hospitals in all commands a matter of difficulty. Feeling is strong against the use uildings for the purpose, and it has become necessary to ise hut-ments which are the property of the Government. very instance, not only in the Eastern Command, there been strong local opposition to the location of hospitals his nature. Every possible consideration has been given to representations, but there being no alternative, the hospitals have been located in hut-ments which could be spared, having regard to other military considerations.

TUESDAY, NOV. 6TH.

Medical Services in Mesopotamia.

Major DAVID DAVIES asked the Under Secretary for War whether Surgeon-General Sir William Babtie was appointed to his present position as Director of Medical Services at the War Office in recognition of the services he rendered in Mesopotamia; whether the causes of the breakdown of the medical services in Mesopotamia had been examined by any court-martial or court of inquiry; and whether the Army Council was satisfied as to what officer or officers must be held responsible for the breakdown of the medical services in Mesopotamia.—Mr. MACPHERSON replied: Surgeon-General Sir William Babtie was Director of Medical Services at the War Office before the report of the Mesopotamia Commission was issued. After the appearance of the report he was given leave pending its consideration. As I have already stated, Sir William Babtie submitted his explanation to the Army Council, who found it satisfactory, and he was recalled from leave to resume his official duties. I added that the Council still awaited the explanation of the other officers. From this it might be inferred, indeed it has been inferred, that these officers were called upon for their explanations at the same time as Sir William Babtie, and that they failed to submit them within a reasonable time. Such is not the case, and I regret very much that my reply should have given any ground for an inference both unwarrantable and unjust and prejudicial towards the distinguished officers concerned, who are, and have been, anxious to offer their explanations. Until all the explanations have been received I cannot answer the last part of my honourable friend's question.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BARBOUR, D., M.B., Ch.B. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Muirkirk District of the County of Ayr.

CHEYNE, Sir W. WATSON, K.C.M.G., C.B., F.R.S., Consulting Surgeon to King's College Hospital.

CUMMINS, W. E. A., M.D. R.U.I., one of the Medical Referees under the Workmen's Compensation Act, 1906, for the West Riding of the County of Cork (Macroom and Bandon Divisions) and for the portion of the East Riding of the County, including Cork City and Cork East Riding, except the towns of Passage Monkstown and Queenstown.

GOLDSMITH, B. K., M.B., Ch.B. Edin., D.P.H., Temporary Assistant Medical Officer of Health for Manchester.

GRANT, A. B., HIRCHMAN, N., and PONDER, E., Resident Surgeons to the Edinburgh Royal Infirmary.

KING, J. C., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Barry District of the County of Glamorgan.

LEAKEY, C. M., L.M.S.S.A., Certifying Surgeon under the Factory and Workshop Acts for the Gunnislake District of the County of Cornwall.

TREADWELL, O. F. N., F.R.C.S. Eng., one of the Commissioners under the Prison Act, 1877.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BETHNAL GREEN BOARD OF GUARDIANS.—Temporary Medical Superintendent. Salary at rate of £550 per annum, with board, &c.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road.—House Surgeon.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Resident Medical Officer. Salary £150 per annum, with board, &c.

GLAMORGAN COUNTY COUNCIL.—Temporary Female Medical Officer for medical inspection of children in public elementary schools. Salary at rate of £300 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LIVERPOOL COUNTY ASYLUM, Rainhill.—Temporary Assistant Medical Officer. Salary 7 guineas per week, with board, &c.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon. Salary £125 per annum, with board, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Female Resident Medical Officer, unmarried. Salary at rate of £200 per annum.

MANCHESTER ROYAL INFIRMARY.—Resident Surgical Officer, £225 per annum; Assistant Resident Surgical Officer; Accident Room House Surgeon; and Resident Medical Officer, Central Branch. £200 per annum each.

NETLEY, WELSH HOSPITAL.—Medical Officer. Salary at rate of £400 per annum, with board, &c.

NORTHAMPTONSHIRE SANATORIUM, Creaton, near Northampton.—Medical Superintendent. Salary £300 per annum, with board, &c.

NORTH-EASTERN HOSPITAL, St. Ann's-road, Tottenham, N.—Female Resident Temporary Assistant Medical Officers. Salary 7 guineas per week.

NOTTINGHAM GENERAL HOSPITAL.—Female Casualty House Surgeon for six months. Salary at rate of £250 per annum, with board, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Female Resident Medical Officer. Salary at rate of £160 per annum, with board, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary £120 per annum, with board, &c.

READING, ROYAL BERKSHIRE HOSPITAL.—House Surgeon for six months. Salary £275 per annum, with board, &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E.—House Surgeon. Salary at rate of £150 per annum, with board, &c.

SURREY COUNTY COUNCIL.—Medical Officers for Mother and Infant Welfare and School Work. Salary £400 per annum.

SWANSEA UNION.—Resident Assistant Medical Officer to the Institution. Salary £300 per annum.

THE Home Secretary gives notice that he proposes to appoint a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 9, and to be attached more particularly to the Stockport, Ashton-under-Lyne, and Stalybridge and Hyde County Courts. Applications should be addressed to the Private Secretary, Home Office, not later than Nov. 23rd, 1917.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Bangor, Carnarvon.

Births, Marriages, and Deaths.

BIRTHS.

CAMPBELL.—On Nov. 1st, at the Priory Nursing Home, Cambridge, the wife of Lieutenant-Colonel R. D. Campbell, D.S.O., A.A.M.C., of a son.

FURBER.—On Oct. 17th, at Spero, Salisbury, the wife of Major T. Maynard Furber, A.A.M.C., of a daughter.

GWYNNE HOWELL.—On Oct. 29th, at Llanelwedd Hall, Builth, Wells, the wife of Captain F. D. Gwynne Howell, D.S.O., M.C., R.A.M.C., of a son (stillborn).

LAMBKIN.—On Nov. 3rd, at Grove Lodge, Ingatestone, the wife of Temporary Lieutenant-Colonel E. C. Lambkin, R.A.M.C., of a daughter.

WATSON.—On Nov. 1st, at Earlham-road, Norwich, the wife of Dr. Henry Watson, of a son.

MARRIAGES.

ALDRIDGE—KNEVITT.—On Monday, Nov. 5th, 1917, at Emanuel Church, Plymouth, by the vicar, the Rev. Dr. Flynn, Charles Aldridge, M.D., of Belle Vue House, Plympton, S. Devon, to Edith Knevitt, of 4, Thom Park Terrace, Mannamead, Plymouth.

CROSBIE—GILLILAND.—On Oct. 30th, at St. Augustine's Church, Londonderry, Captain Douglas B. Crosbie, M.C., R.A.M.C., to Meg, only child of Mr. and Mrs. Robert K. Gilliland, Ardcaien, Londonderry.

SHIRES—ROBINSON.—On Oct. 31st, at All Saints Church, Bentley-road, Sefton Park, Liverpool, Captain Bertram Shires, R.A.M.C., to Vera, only daughter of the late Mr. and Mrs. Wellburn Grainger Robinson, Meadowfield, Whitby, Yorkshire.

DEATHS.

BRISTOW.—On Nov. 1st, at Amesbury-avenue, Streatham-hill, S.W., George Hamilton Bristow, M.D., F.R.C.S.I., aged 50.

ELLISON.—On Nov. 1st, at Eton, Lieutenant-Colonel William Augustine Ellison, M.V.O., M.D., Surgeon to His Majesty's Household at Windsor.

MARTIN.—On Nov. 5th, at The Gables, Crawley, Sussex, Timothy Henry Martin, J.P., M.R.C.S., L.S.A., aged 80.

MCVAIL.—At 3, St. James'-terrace, Glasgow, on Nov. 4th, Sir David Caldwell McVail, M.B., F.R.F.P.S.G.

O'KELLY.—On Oct. 30th, at the residence of her uncle, George Wilson, Esq., Slaney-road, Walsall, Sarah (Sallie), dearly beloved wife of Captain Fitzgerald O'Kelly, R.A.M.C., of Cross Lodge, Boldon, Newcastle-on-Tyne, age 33.

WHIPHAM.—On Nov. 3rd, at Fishleigh House, Hatherleigh, Devon, Thomas Tillyer Whipham, M.D. Oxon., F.R.C.P. Lond., Consulting Physician to St. George's Hospital, aged 78 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 7th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 1	...	56	56	42	50	50	Overcast
,, 2	0·05	63	59	49	55	55	Overcast
,, 3	0·09	54	53	50	50	50	Raining
,, 4	0·33	74	54	49	47	49	Fine
,, 5	...	61	54	38	40	40	Fine
,, 6	0·05	79	55	40	53	54	Raining
,, 7	0·06	68	49	45	44	46	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Notes, Short Comments, and Answers to Correspondents.

A MEDICAL PRACTITIONER AND A CORONER.

To the Editor of THE LANCET.

SIR,—On Oct. 4th I was called to see an old patient whom I had previously attended for chronic valvular disease of the heart. She was in bed and complained of pain over the region of the stomach with sickness. I prescribed for her and saw her again the next day when she was considerably relieved, and asked me not to come too often. However, on the 8th I saw her again, when she showed signs of ascites with swelling of feet and legs. The bowels had been freely opened daily, the sickness had ceased, and she was better in every way. On the 11th I saw her again; there was an increase of fluid made out by palpation and percussion; the bowels had acted and she had not been sick. However, as she was more or less by herself all day, and did not wish me to call too often, I suggested that she should go to the infirmary, and gave her a note for the relieving officer, as I thought in the event of tapping being required she would be better looked after. I heard no more until the following Monday, the 15th, when the coroner's officer came to me and handed me a subpœna to attend an inquest on my patient the next day. He told me that she had been admitted to the infirmary and was placed on the table for operation and died under the anæsthetic. At a subsequent post-mortem it had been found that she had intestinal obstruction, peritonitis, abscess in the pelvis, and commencing cancer of lower bowel.

At the coroner's court the next day I gave evidence having been called by the coroner. I was submitted to a cross-examination as to my method of treatment and the drugs I had given, and was asked why I had not discovered all the things found after death by the pathologist, Dr. R. S. Trevor. I protested against this, for every medical man will know how easy it is to be wise after the event. Moreover, I was not present at the post-mortem, not having been notified that this was going to take place, and I could not accept the coroner's statement, which I could not verify. The patient had not shown any symptoms pointing either to intestinal obstruction, cancer, or abscess in the pelvis, and 36 hours had elapsed from the time of the examination. The coroner who had summoned me told me brusquely to "*Stand down*," because I disagreed with his view that I ought to have discovered things of which there were no symptoms during the life of the patient.

I received no fee for attendance, and on application to the coroner's officer next day I was told over the telephone by that officer that he had instructions from the coroner *not to pay me*. I then made a formal application to the coroner direct, and next morning the officer handed me the fee, remarking that he had made a mistake in giving me a subpœna, "*that the coroner merely wanted me to be there—in my own interests.*"—I am, Sir, yours faithfully,

JAMES SMYTH, M.D.

Wandsworth Common, S.W., Oct. 21st, 1917.

*** We have compared a long report of the inquest which appeared in the *South-Western Star* on Friday, Oct. 19th, with Dr. Smyth's letter, and his account of the proceedings is substantially supported thereby. The patient's cardiac condition accounted for her prominent symptoms, while no signs pointed especially to malignant stricture, nor did any of her complaints indicate the existence of such a condition. When it became obvious that she would have to go to an institution for operation Dr. Smyth rightly recommended this course to her. At the infirmary it was decided to operate for intestinal obstruction, and the patient died during the administration of the anæsthetic. At the post-mortem examination the disease of the heart and large blood-vessels, which had been recognised by Dr. Smyth, were found, and, in addition, malignant disease of the intestine. Mr. Oddie, the coroner whose duty it was to inquire into the cause of death of the patient, subpœnaed Dr. Smyth and inquired why he had not found, while the woman was alive, the malignant disease which, after death, was discovered. Dr. Smyth replied correctly in pointing out that he was not present at the post-mortem examination, so that he did not know from personal observation what conditions other than those which he had himself discovered were actually present. But at this point in his evidence, according to the report in the *South-Western Star*, "'Stand down,' said the coroner abruptly." Dr. Smyth seems to us to have done everything that he could in the interest of his patient while she was alive and to have given proper evidence at the inquest. Comment on the case in the *South-Western Star* commences with the following sentence: "It would be regrettable if there should be any renewal of the strained relations which at one time existed in this district between the

Comments, Notes, and Correspondence

coroner and members of the medical profession." We have no idea what the reference to "strained relations" means, but we recommend that when medical witnesses are subpœnaed by a coroner "in their own interests" they should have those interests watched over in court by their legal advisers.—ED. L.

MEDICAL MATTERS IN BERLIN.

THE Berlin correspondent of the Munich *Medical Journal* gives a graphic picture of medical matters in Berlin during the early October weeks. A public exhibition is being held in the Kaiserin Friedrich's House to keep up the interest in small-pox awakened by the epidemic of last spring. In this exhibition the work of Jenner is properly recognised. The question of fees is agitating the medical profession in Berlin. The public, on the one hand, inclines to think that the extra work laid on doctors brings with it a sufficiently increased income, while the doctors themselves point out that this does not balance the all-round additions to the cost of living. The difficulty of heating the consulting-room affects not only the medical man, but the patients who visit him. On cold wintry days it is hardly fair to ask a patient to disrobe to be examined, and to forgo this makes the consultation of doubtful value. The amenities of city practice are gone. It is becoming more and more difficult to get about. A taxi-cab is a rarity; travel by tram, omnibus, or underground railway wastes much time, the longer period occupied in the crowded journeys being almost unbearable. The insufficient, almost absent, street lighting in the later hours of the night makes a visit at this time an adventure. The doctor, called out of his nocturnal rest, frequently finds himself translated into rural conditions unfamiliar to him, and it is only with a lantern that he can safely go abroad. The correspondent concludes with these words: "Nevertheless, all these inconveniences we shall have to bear without complaint, for we know that they are unavoidable for the moment."

TREATMENT OF THE INVALIDED SAILOR OR SOLDIER.

To the Editor of THE LANCET.

SIR,—The statement in THE LANCET of Oct. 27th (p. 655) by the Gloucester Local Medical and Panel Committee that it is unfair for the above treatment to be given by non-panel men as well an panel men (and which seems to be endorsed by you) is so unjust that I venture to ask you to reconsider your opinion. In the first place, it is merely carrying out the promise of the author of the Bill of freedom of choice of doctor for the patient by contracting out if his doctor was not on the panel, and freedom for the doctor by attending on the pooling system if he did not wish to work under the Act. In the second place, taking this town as an example, more than one-third of the profession held, and still hold, to their word and the "scrap of paper" they signed some years ago. Owing to the action of the Local Insurance Committee, almost none of their patients were allowed to contract out, and so the panel men got several hundred patients of the non-panel men. This never troubled them, but if the panel men now object to these sailors and soldiers being allowed the choice of going to the non-panel men, then the injustice and absurdity of the complaint is so great as to be almost ludicrous.—I am, Sir, yours faithfully,

RAYMOND H. SHAW, M.S., M.B. Durh.

Great Yarmouth, Oct. 30th, 1917.

*** But we did not endorse the statement attributed to the Gloucestershire Local Medical and Panel Committee.—ED.L.

"CELESCO."

IN our issue of Sept. 1st we published an analytical notice of a preparation named "Teekoe," which was offered as an economic substitute for tea, coffee, and cocoa. We found that its basis was reduced cocoa shell, which yields notable amounts of theobromine, fat, and proteins when treated with boiling water, and, moreover, the "tea" so obtained is quite agreeable to the palate and not "stodgy." We now understand that this preparation is shortly to be put on the market under the name of "Celesco," and a recent sample submitted to us gave results on analysis identical with those given by "Teekoe." The newer preparation shows an improvement in regard to the uniformity of the flakes. It yields a mild, stimulating and nutritive infusion.

C. J.—There is already a station in the district where the deposit is collected, and the results appear in our monthly returns. The attention of the Advisory Committee on Atmospheric Pollution (47, Victoria-street, Westminster, London, S.W. 1) might be called to the matter.

The following journals, magazines, &c., have been received:—Annales de Medecine, Practitioner, American Journal of Surgery, Journal of the Missouri State Medical Association, British Journal of Ophthalmology, British Journal of Dermatology, American Journal of Medical Sciences, National Medical Journal, British Dental Journal, Annali di Medicina Navale e Coloniale, Bulletin of the Johns Hopkins Hospital, Pacific Medical Journal, Medico-Legal Journal.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. A. P. Laurie and Mr. C. Ranken: Investigation into the Imbibition exhibited by Some Shellac Derivatives (communicated by Prof. J. Walker).—Mr. G. I. Taylor: Phenomena connected with Turbulence in the Lower Atmosphere (communicated by Sir Napier Shaw).—Mr. E. G. Bilham: On the Relation between Barometric Pressure and the Water Level in a Well at Kew Observatory (communicated by Sir Napier Shaw).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, Nov. 15th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, H. MacCormac; Acting Hon. Secretary—S. E. Dore): at 5 P.M.
Cases will be shown at 4.30 P.M.

Friday, Nov. 16th.

OTOLOGY (Hon. Secretaries—Somerville Hastings, J. F. O'Malley): at 5 P.M.
Address by the President, Dr. H. Banks Davis.
Paper: Mr. T. Mark Hovell: Menière's Symptoms, their Causation and Treatment.
Cases will be shown by the President (Dr. H. J. Banks Davis), Dr. Dundas Grant, Mr. E. D. D. Davis, Mr. Somerville Hastings, and others.

ELECTRO-THERAPEUTICS (Hon. Secretaries—H. P. Cumberbatch, R. Knox): at 8.30 P.M.
CLINICAL EVENING.—Cases, radiograms, &c., will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY.—8.30 P.M., Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis:—(1) Dr. T. D. Lister: Introduction; (2) Dr. D. Lawson: As regards the Well-to-do; (3) Dr. N. Bardswell: As regards the Middle Classes; (4) Dr. W. O. Meek: As regards the Working Classes. (The Discussion to be continued on the following Monday.)

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—Papers:—Dr. A. T. Ozzard: Some Sanitation Problems of the Sugar Estates and Villages of British Guiana.—Read for Dr. A. J. Chalmers and Dr. R. Pekkola: Enteromonas hominis da Fonseca 1915. Dr. A. C. Stevenson will show Some Specimens of Trypanosomes in the Brain of Guinea-pigs.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., FitzPatrick Lectures:—Dr. A. Chaplin. Medicine in England during the Reign of George III.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First-Aid and Ambulance Students:—
MONDAY.—5 P.M., Mr. S. G. Shattock: Inflammation and Gunshot Injuries.

POST-GRADUATE COLLEGE, West London Hospital, Hammer mith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella.
TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting. Special Demonstration:—Mr. Howell Evans: Serious Abdominal Injuries from Slight Traumatisms.
WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.
THURSDAY.—2.30. P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. E. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.
FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.
SATURDAY.—2.30 P.M., Surgical Operations: Mr. H. W. Carson.

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VENEREAL DISEASE TREATMENT.



LIQ. SANTAL FLAV. c. BUCHU ET CUBEBÂ (HEWLETT'S)

Originally introduced by us in 1877, and has become a standard remedy all over the world in the treatment of CHRONIC DISEASES of the URETHRA, &c.

THE LANCET wrote, December 8th, 1877:—

"A safe and valuable remedy. It mixes perfectly with water, and, as it can be taken with ease, it is sure, we think, to come into common use."

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"Messrs. C. J. Hewlett & Son have forwarded to us a 'Liquor Santal Flav. cum Buchu et Cubebâ'; it is readily miscible with water, and when administered proves to contain all the medicinal virtues rightly attributed to these drugs."

DOSE: One to two drachms in water or milk.

Price, in England ... 11s. lb.

To ensure obtaining the Original Preparation, please write "LIQ. SANTAL FLAV. c. BUCHU et CUBEBÂ (HEWLETT'S)," or the title may be conveniently abbreviated to "Liquor Santal Co. (HEWLETT'S)."

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IODERMIOL is a bland emollient, non-irritating and non-staining preparation of Iodine, superior to the official tincture or ointment in strength. It is perfectly miscible with oils, and a 10% solution in Almond Oil has been successfully employed in injections.

IODERMIOL BOUGIES contain 25% Iodermiol, and are approximately equal in strength to the B.P. tincture of iodine, without the disadvantages of that preparation. They have been used with great success in various stages of the disease.

Price ... ... 2s. 6d. per dozen.

IODERMIOL PESSARIES also contain 25% Iodermiol and have been found useful in inflammatory conditions of the Uterine organs.

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TABLETS POT. IODID. et HYDRARG. PERCHLOR.—These tablets have been made for several years and proved very successful. They contain 5 grains Potass. Iodid. and $\frac{1}{16}$ gr. Hydrarg. Perchlor.

In bottles of 100 ... ... 30s. per doz.

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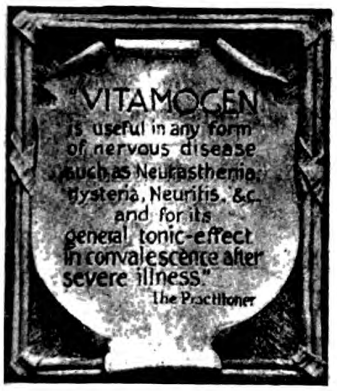
VITAMINES:

Their Nature and Properties.

UNTIL a few years ago it was considered by Physiologists that an ideal dietary consisted of 5 classes of Food Stuffs:

Proteids	**Salts**
Carbohydrates	**Water**
Fats	

and experiments to determine the value of various foods, and enquiries into animal metabolism were based upon this idea.



Recently, however, it has been conclusively proved that there is something else which must be taken in the food in order to allow animals to grow, and to maintain their bodies in a healthy condition. This new substance has been called by Funk —— **Vitamine.** Its exact nature and the method in which it acts have not so far been determined, but it probably is of the nature of one of the so-called "internal secretions," hormones, or enzymes, the immense importance of which in the living organism has long been known.

One of our leading Physiologists makes the strong statement that "an animal, or at any rate a young animal, cannot live on protein alone, even If mixed with appropriate mineral salts, and with a proper supply of fat and carbohydrate to supply the necessary energy; these other organic compounds of uncertain nature are **absolutely indispensable.**"

VITAMINE is essential for the proper growth of Animals.

Professor Hopkins has conducted a very interesting series of experiments on the importance of Vitamines.

It has been previously found by Osborne and Mendel that synthetic dietaries which were capable of maintaining the life of full grown rats were quite unable, no matter that the protein, to maintain the growth processes in young animals, while small additions of tissue extracts were sufficient to induce growth. They also proved that after a time the animals declined, and unless a change in diet was instituted they died.

Hopkins fed a number of rats on an artificial diet consisting of casein (Proteid), fat, starch, sugar. By estimating the total energy consumption of the food he found that the rats fed upon this synthetic diet ceased to grow at a time when their intake was more than sufficient quantitatively to maintain normal growth.

In conclusion, Hopkins states, "**Results and figures make it perfectly clear that some factor in diet other than its protein and energy content is indispensable for growth.**"

Another important point was brought out by Hopkins in these experiments, that "a given increment of weight was obtained with much greater economy when the portion of milk was added to the artificial dietary."

The Influence of Vitamine on "Deficiency Diseases."

The fact that Vitamine is necessary for the normal metabolic processes to be properly carried out in man is proved by a study of what have been called the "Deficiency Diseases," including Beri-Beri, Pellagra, Scurvy, and Rickets.

Beri-Beri.

Beri-Beri is a disease which was very prevalent in the Malay Peninsula and other Countries where rice is the staple article of diet. The rice grain consists of an inner part and an outer husk. In polished rice the outer husk is removed, and the natives, who lived chiefly on such rice, suffered from Beri-Beri. It was found that the additions of the husk, or the substitution of unpolished for polished rice, was sufficient to cure the disease. The symptoms of this disease are such as arise from peripheral neuritis, or atrophy of the peripheral nerves with subsequent degeneration of the muscles, including the heart muscle. A Government report for Siam shows the marvellous improvement in the death rate of prisoners from Beri-Beri following upon the substitution of unpolished for polished rice in the year 1909.

Deaths from Beri-Beri in 1906 ...	... 113
1907—1908 ...	... 104
1908—1909 ...	... 122
1909—1910 ...	... 3
1910—1911 ...	... 3
1911—1912 ...	... 0

The "something" contained in the rice husk which prevents or cures Beri-Beri has been shown by Funk to consist of Vitamine. He has succeeded in extracting it from the rice husk in a more or less pure state.

Vitamogen not only contains all the essentials of a complete food, but enables the body to utilize other food to better advantage owing to the action of **Vitamine** as a ferment.

MANUFACTURERS:

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24/26, HOLBORN. E.C. 1.

VITAMOGEN is not an expensive preparation —a 2/- tin contains approximately 4 ozs., and a 4/6 tin 12 ozs., so that it is within the reach of all classes.

Packed in 7 and 14 lb. tins for Hospital use, &c.

Samples are sent without charge to Medical Men.

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and in Endamebic Pyorrhea

The oral administration of the ipecac alkaloids is proving more advantageous than the hypodermatic injection of emetine, especially in the treatment of endamebic carriers and in the prevention of relapses.

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Each tablet contains the alkaloids (emetine and cephaeline) from ten grains of Ipecac, U. S. P., held in an adsorption compound with hydrated aluminum silicate. The tablets disintegrate but this adsorption compound passes through the acid contents of the stomach and releases the alkaloids only in the alkaline intestinal secretions—thus preventing gastric disturbances.

Ten or twenty tablets, representing one hundred or two hundred grains of ipecac, may be given in a day without vomiting or nausea.

Distributed through the Drug and Dental Trades in bottles containing 40 and 500 tablets. Further information on request.

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Suitably diluted, applied by injection, douche or spray, often serves a useful purpose in catarrhs and conditions involving hyper-secretion from mucous surfaces. It is an efficient deodorizer.

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Liquor Opii Sedativus

(BATTLEY)

THE OLDEST and still THE BEST Hypnotic and Sedative.



Advantages:

¶ May be given with the greatest safety, being pure and free from harmful matter.

¶ No disagreeable after-effects follow its use.

¶ Never varies in strength.

The *Medical Annual* writes:

"**Battley's Solution of Opium** is a common word in the Practitioner's vocabulary. It has gained its reputation by its intrinsic value as a remedy which contains all that is sedative and anodyne in opium without its resinous constituents, which are, therapeutically speaking, impurities."

Strength—Twice that of Tinctura Opii B.P. Usual Dose—5 to 15 minims.

Issued in 2 oz., 4 oz., 8 oz. and 1 lb. bottles.

NOTE.—We do not guarantee our preparations unless in original bottles with the autograph of Richard Battley over each cork and on the label, without which none is genuine.

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Differs from other preparations of the Hypophosphites. Leading Clinicians in all parts of the world have recognized this important fact. HAVE YOU?

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REJECT < Cheap and Inefficient Substitutes
Preparations "Just as Good"

THE FELLOWS MEDICAL MANFG. CO. LTD. MONTREAL & NEW YORK

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Their Health and Housing.

THE Government and other hostels and welfare clubs, which have been erected in many districts in the interests of women workers and of public health in this and the coming generation, usually ensure hygienic and economical comfort for their inhabitants by the use of gas apparatus throughout.

Gas cooking appliances, which eliminate the risk of waste in fuel or food; a gas fire in each sitting-room; and a slot-meter geyser in every bath-room mean that when the day's labour is over the workers can obtain a well-cooked meal, pleasing and healthful warmth—**radiant** heat, be it noted—and a hot bath at very moderate cost to themselves and the minimum of trouble to the staff.

Further information can be obtained on application to the Secretary, The British Commercial Gas Association, 47, Victoria Street, S.W 1., an advisory and research body representing the chief undertakings of the United Kingdom.

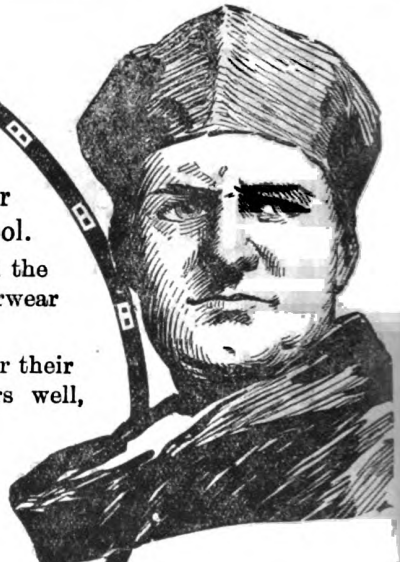
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Wolsey garments may always be recommended for their hygienic and dependable qualities. Wolsey wears well, washes well, and is guaranteed unshrinkable.



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For men, women, and children. See the Trade Mark on every garment.

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THE BURBERRY

beats every other form of protection, however severe the conditions.

Unlike rubberproofs, or weatherproofs interlined with oiled silk, **THE BURBERRY** is free from the unhealthy heat engendered by airtight fabrics.

Another advantage of **THE BURBERRY** is the permanence of its proofing. Rubber and interlined coats are spoilt by any extreme of cold or heat, but **THE BURBERRY**, owing to the protective agent being ingrained in every thread of the cloth, retains its unrivalled weather-resisting properties throughout the roughest usage in any climate.

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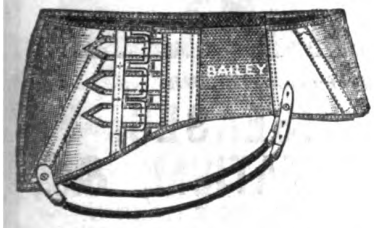
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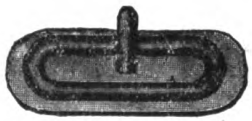
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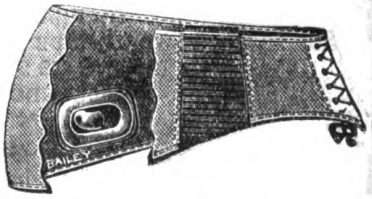


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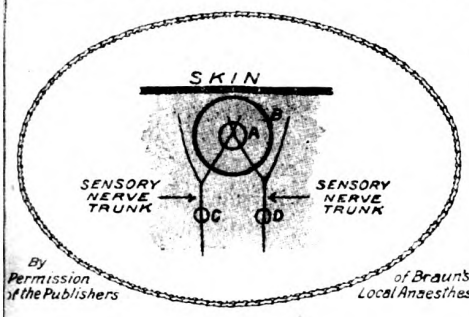
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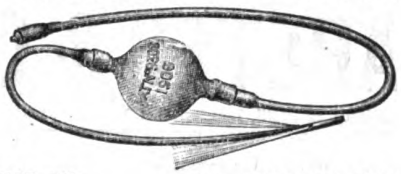
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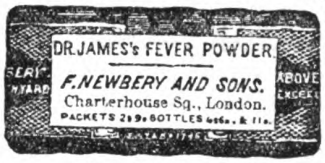
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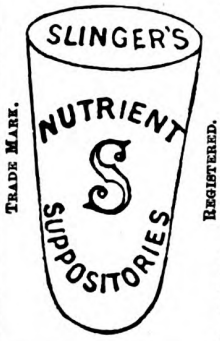
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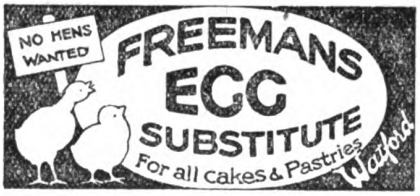
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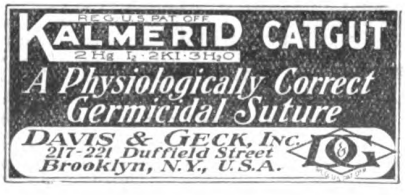
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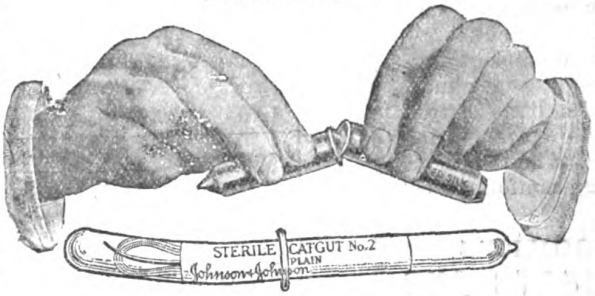
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For the Upper and Middle Classes only.

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a branch establishment, two miles from the Hospital, where there is a farm of 473 acres, which supplies the Hospital with meat, milk, and other farm produce.

BRYN-Y-NEUADD HALL, LLANFAIRFECHAN,

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Patients or Boarders may visit this branch for long or short periods, and can have Private Rooms in Villas in the Park.

For particulars apply to the Medical Superintendent, St. Andrew's Hospital, Northampton. TELEPHONE No. 56

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Six acres of ground, highly situated, facing Finsbury Park.

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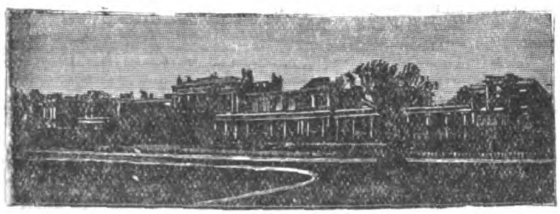
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For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

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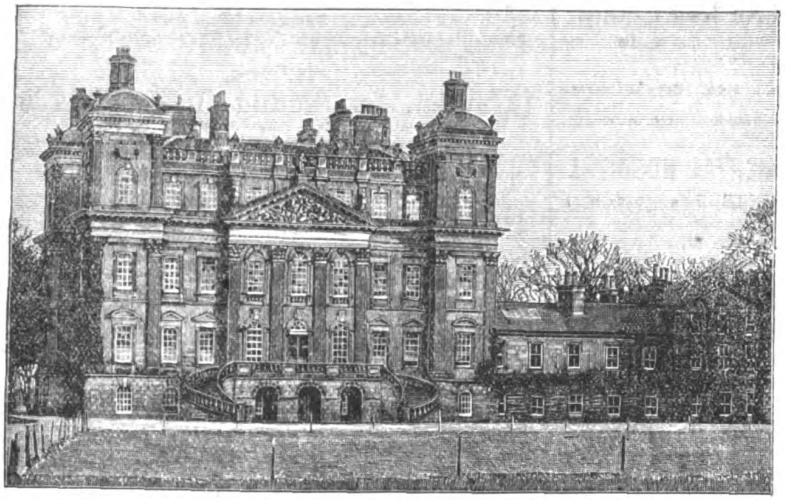
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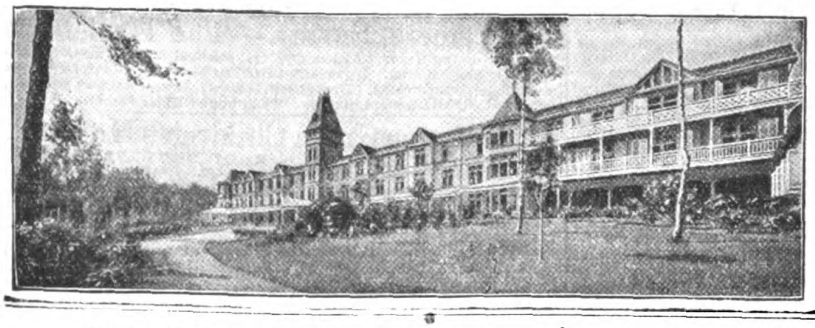
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A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

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Two Ladies (Nurses) would like Care of Elderly or Invalid Lady or Gentleman. Comfortable home with every attention. Highest references.—Address, Misses Ringwood and Inge, "Askdale," Langstone, near Havant, Hants.

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By order. W. H. PEARCE, Secretary.

Birkenhead and Wirral Children's HOSPITAL, Woodchurch-road, Birkenhead.—There is a vacancy for a HOUSE SURGEON (Male or Female), duly qualified and registered, at the above Hospital. Honorarium by arrangement. Applications, with testimonials (copies), to be sent to F. W. ARCHER, 14, Cook-street, Liverpool.

House Surgeon (ineligible for Military Service) required for the ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E. (40 beds). The duties include attendance in the Out-patient Department. Salary at the rate of £150 per annum, with board and residence. Applications, with copies of recent testimonials, to be addressed to the Secretary at the Hospital.

Royal Berkshire Hospital (260 beds, 166 Military).—Wanted, HOUSE SURGEON. Salary £275 per annum, with board, lodging, and washing. The appointment is for six months. Candidates must be duly qualified and on the Medical Register. Applications, with copies of three testimonials, should be addressed to the undersigned, of whom any further information may be obtained.

Reading, 10th November, 1917. HERMAN BURNEY, Secretary.

Welsh Hospital, Netley.—Wanted at once, for the Welsh Hospital, Netley, MEDICAL OFFICER to take charge of Surgical Wards.

Salary at the rate of £400 per annum, with board and residence &c. An Hon. Commission as Lieut. R.A.M.C. is granted by the War Office.

Applicants must be over Military age, or else unfit for General Service. Preference given to those with previous War experience.

Applications to the Commanding Officer, the Welsh Hospital, Netley.

Manchester Children's Hospital, Pendlebury, near Manchester (188 beds).

Wanted, a RESIDENT MEDICAL OFFICER (Lady), who will be appointed for six or twelve months from 1st February. Candidates must be unmarried, doubly qualified, and duly registered.

Salary at the rate of £200 per annum, including war bonus. Applications, stating age and accompanied by copies of testimonials, to be sent to the undersigned at the Hospital, Pendlebury, near Manchester, at once.

By order.

Oct. 26th, 1917. W. M. HUMPHRY.

Bury Infirmary.—Wanted, a Junior HOUSE SURGEON (ineligible for Military Service), who must have both Medical and Surgical qualifications. Salary £150 per annum, with board, residence, and washing. Among other duties the person appointed will have charge of the Children's Ward, the Ophthalmic Department, Casualty and Out-Patients' Departments, and the administration of Anæsthetics. Terms of appointment not exceeding nine months, then eligible for the Senior House Surgeon's post if suitable.

Applications, stating age and nationality, with testimonials and photograph, to be sent at once to the Honorary Secretary, Infirmary, Bury, Lancashire.

West Kent General Hospital, Maidstone.

—Wanted, from November 21st, ASSISTANT HOUSE SURGEON. Salary £125, with board and lodging. Need not be fully qualified. Apply, with details, to Secretary.

Lady Assistant Medical Officers

(Resident, Temporary) required at the NORTH-EASTERN HOSPITAL, St. Ann's-road, Tottenham, N. 15. Salary 7 guineas per week. Apply to the Medical Superintendent at the Hospital.

East London Hospital for Children,

Shadwell, E. 1.—Applications are invited for the post of RESIDENT MEDICAL OFFICER. Applicants must be duly qualified Practitioners in Medicine and Surgery. Salary £150 per annum, with board, residence, and laundry. W. M. WILCOX, Secretary.

Nottingham General Hospital.—

Wanted, a CASUALTY HOUSE SURGEON (Medical Woman). She will be appointed for six months. Duties to commence on the 1st of December, 1917. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 15th of November. By order.

E. M. KEELY, Secretary.

Surrey County Council. — Appointment

of MEDICAL OFFICERS for Mother and Infant Welfare and School Work.—Applications are invited from Doctors (Men or Women) prepared to devote their whole time to this work, which will include attendance at consultation centres, inspection of school children, an attendance at school clinics.

Salary £400 a year, rising by annual increments of £25 to £450, and actual travelling expenses.

Applications for part-time employment will also be considered.

Applications, stating age, qualifications, and experience, with copies of three recent testimonials, to be sent by Wednesday, November 14th, 1917, to the County Medical Officer of Health, 13, Penrhyn-road, Kingston-upon-Thames.

Bristol Royal Infirmary.—Applications

are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Manchester Royal Infirmary.—The

Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointments:—

RESIDENT SURGICAL OFFICER, £225.
ASSISTANT RESIDENT SURGICAL OFFICER, £200.
ACCIDENT ROOM HOUSE SURGEON, £200.
RESIDENT MEDICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

Each appointment is subject to the provisions of the by-laws as to notice of resignation.

Candidates must state age and send twelve copies of their application and testimonials to the undersigned on or before 9 A.M. on Wednesday, the 14th November 1917. By order.

FRANK G HAZALL, General Superintendent and Secretary.

23rd October, 1917.

Bethnal Green Board of Guardians.—

Temporary MEDICAL SUPERINTENDENT.—The Guardians invite application for the appointment of a Temporary Medical Superintendent to take charge of the Medical work at their Infirmary, their Institution at Waterloo-road, and the Outdoor Sick Poor. The Infirmary is a recognised Training School for Nurses.

The salary will be at the rate of £550 per annum, with board, furnished apartments, and laundry, together with fees from various sources estimated to amount to about £78 per annum.

If the successful candidate should be a married man a further allowance up to the sum of £90 per annum will be made in respect to house rent, rates, taxes, and water until the Guardians provide him with such accommodation.

Candidates must possess both a Medical and Surgical qualification, and be ineligible for the Army or Navy.

The Doctor appointed will be required to devote the whole of his time to the duties of the office, and whether married or single to reside at Waterloo House.

Canvassing the Guardians, either directly or indirectly, is prohibited, and will disqualify any candidate.

Forms of application can be obtained by forwarding a stamped addressed foolscap envelope to the undersigned, and must be returned to reach him not later than the first post on Thursday, 15th November, 1917. By order.

D. THOMAS, Clerk to the Guardians.

Bishop's-road, Victoria Park, E. 2, 6th November, 1917.

Rotherham Hospital.—Wanted,

JUNIOR HOUSE SURGEON, Male, qualified. Salary £150, with board, lodging, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

Temporary Assistant Medical Officer

is required for the COUNTY ASYLUM, Rainhill, near Liverpool. Ineligible for Military Service. Seven guineas a week, with quarters, board, and lodging. Apply, Medical Superintendent.

Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W. 3. — The Committee of Management invite applications for the post of HOUSE PHYSICIAN. Applicants must be ineligible for Military Service. The duties include work in the Out-patient Department as well as in the wards. Further particulars may be obtained from the undersigned, to whom applications, with testimonials, should be addressed. The appointment is for six months, with an honorarium of 30 guineas.

November, 1917. FREDERICK WOOD, Secretary.

Swansea Union.—Resident Assistant

MEDICAL OFFICER (Institution). — The Guardians invite applications from candidates, Male (ineligible for Military Service) or Female, for the above appointment for the period of the war.

Salary £360 per annum, with extra £100 per annum in lieu of house.

Full particulars and form of application to be obtained from the undersigned, by whom same must be received not later than Nov. 19th, 1917. (Early application desirable.) LLEWW. JENKINS, Clerk.

Union Offices, Alexandra-road, Swansea, 7th November, 1917.

Northamptonshire Sanatorium,

Creaton, near Northampton.—MEDICAL SUPERINTENDENT —The Committee of the above Institution (for treatment of early cases of Tuberculosis) invite applications for the post of Medical Superintendent from gentlemen ineligible for Military Service. The salary offered is £300 per annum, rising on approved service to £350 by annual increments of £25. Furnished quarters, board, and laundry provided in the Institution.

Applications, stating age, qualifications, and previous experience, along with copies of three recent testimonials, endorsed "Medical Superintendent," should be sent not later than 21st November to the undersigned. A. CLIFFORD TOWERS, Secretary.

Drury Chambers, Market Square, Northampton, 5th Nov., 1917.

Glamorgan County Council.—

MEDICAL INSPECTION OF CHILDREN IN PUBLIC ELEMENTARY SCHOOLS.—The Glamorgan County Council invites applications for the appointment of a Temporary (Woman) MEDICAL OFFICER for the purposes of the Council's duties as Local Education Authority in the Inspection of Children in, and Medical Supervision of, the Public Elementary Schools, in pursuance of the Education (Administrative Provisions) Act, 1907.

The salary will be at the rate of £300 per annum, with travelling expenses

The person appointed will be required to give her whole time to the duties under the control and supervision of the School Medical Officer, and to reside where directed by the Committee.

Preference will be given to candidates who have (a) had an adequate training in State Medicine or hold a Diploma in Public Health, (b) had some definite experience of school hygiene, (c) enjoyed special opportunities for the study of disease in children, and (d) who are able to undertake refraction work.

A knowledge of Welsh is desirable.

Applications for the appointment, stating age and qualifications, and accompanied by copies of not more than three recent testimonials, should be addressed to the School Medical Officer, Dr. D. J. MORGAN, County Hall, Cardiff, and should be received by him not later than the first post on the morning of the 26th November.

Canvassing, personal or otherwise, will be a disqualification.

T. MANSEL FRANKLEN, Clerk of the County Council.

Glamorgan County Hall, Cardiff, 25th October, 1917.

Preston Royal Infirmary.—Wanted

at once, a Fifth-year Student to act as RESIDENT MEDICAL and SURGICAL OFFICER. There is also another Senior Student in residence. Duties divided equally. Beds 138, with Out-patient Department, X-Ray and Electrical Department, and Pathological Laboratory.

Salary £120 per annum, with board, residence, and laundry.

Applications, stating age, qualifications, and experience, together with testimonials, to be sent to the undersigned, from whom further information may be obtained. WALTER DAVIES, Secretary.

Secretary's Office, 5, Winckley-street, Preston.

London County Council. — The

Council invites applications for employment as ASSISTANT ORGANISERS of Children's Care Work. Candidates should have had considerable experience in social work, with special reference to children, and should possess organising ability. The salary of an Assistant Organiser on the permanent staff commences at £100 a year, rising by yearly increments of £6 to £130 a year. The rate of pay of a temporary assistant organiser is £2 a week. Assistant organisers (permanent and temporary) are also now paid war wages of 5s. a week each. Married women may apply for temporary employment. Apply for form to the Clerk of the Council, County Hall, Spring Gardens, S.W.1. Enclose stamped addressed envelope. Forms must be returned not later than 11 A.M. on Wednesday, 28th November, 1917. Persons already in the Council's service may apply. Canvassing disqualifies.

JAMES BIRD, Clerk of the London County Council.

Hertfordshire County Council.—TUBERCULOSIS HOSPITAL.—MATRON.—The Hertfordshire County Council invite applications for the post of Matron of the County Tuberculosis Hospital at Ware, Herts.

Candidates must possess a three years' certificate and have had experience in Hospital management. Experience in the management of Tuberculosis cases is also desirable.

Salary £60 per annum, rising by annual increments of £5 to £80 per annum, together with an allowance of £5 per annum for uniform.

Board and lodging will be provided free.

Applications, stating age, experience, qualifications, &c., accompanied by copies of three recent testimonials, to be sent to the undersigned not later than Wednesday, 21st November, 1917.

CHARLES E. LONGMORE,
Clerk of the Hertfordshire County Council.

Clerk of the Peace Office, Hertford, Herts, November 5th, 1917.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Yorkshire.—War Locum Tenens or ASSISTANT (ineligible) to take the place of absent partner in a General Practice. Must be British and under forty-five. Out-door, salary £450.—Address, Tenex, 1, Westfield-street, Barnsley.

Central Africa. — Medical Officer required with experience in Tropical Medicine. Must be under fifty years of age. Knowledge of French essential.—Address, stating age and qualifications, to No. 531, THE LANCET Office, 423, Strand, W.C. 2.

Locum wanted, view to Partnership or Succession, in Practice of £1000 a year, within an hour of London. Population 40,000. Not much night work. Fees from 2s. Small house. Price one year's purchase. — Apply, No. 6201, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Locum Tenens.—No fee to Principals —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

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Lady Dispenser, qualified (Hall), desires post in London. Hospital preferred.—K. M. Carden, 19, Princes-street, Gravesend.

Lady Dispenser (Hall) requires part-time Post in London.—Address, No. 530, THE LANCET Office, 423, Strand, W.C. 2.

Qualified Woman Dispenser and BOOKKEEPER desires work several evenings weekly. Willing to keep Doctor's books. Very experienced and highly recommended. Accessible to W.C. district.— Dispenser, Sutton House, Endsleigh-street, W.C. 1.

Chauffeuse. — Lady desires Daily Engagement in London, with Medical Man for preference. Whole or part time. Careful driver. R.A.C. certificate.—Reply, stating particulars, to E. D., care of Streets, 30, Cornhill, E.C. 3.

Required at once, Cash and Panel PRACTICE in or near London. Principal now free to negotiate. —Send full details in confidence to Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Wanted, a Practice. Country or Bristol preferred. Paying premium out of takings. Healthy. Good references.—D., care of Mrs. Pethybridge, 67, Calbourne-road, Balham, S.W. 12.

Partner wanted in a good-class very old-established General Country Practice in West County. Income over £1800 a year. Poor Law, panel, and other appointments. Mainly agricultural and rising district. Plenty of scope for increase. Good educational facilities. An excellent opportunity for a young and energetic man (ineligible).—Further particulars, apply No. 6193, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Australia. — £400 per annum guaranteed.—An opportunity occurs for a Medical Man to settle down in General Practice in a growing district. Excellent climate. No premium. — Apply personally, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Country Practice.—£500 a year, great scope, near good Town in Lincolnshire. Panel £200. Large house and garden. Fruit-growing district. Vendor retiring. Price only £2?5. —Apply, No. 6171, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

Country Practice, £570 a year. Station. Detached house; garden. Easily worked. Good fees.—Address, No. 529, THE LANCET Office, 423, Strand, W.C. 2.

City Practice for disposal, offering great scope by more attendance. At present about £200 a year, excluding a small panel. Rent moderate. —Apply to 6209, care of Mr. Percival Turner, 4, Adam-street, Strand, London, W.C. 2.

S.E. Suburb. — General Practice, about £400. Long established. No panel. Educational facilities. Near station, 'bus, and trams all parts.—Letters, Sayer, Ledgard, & Smith, 13, Clifford's Inn, E.C. 4.

Easy terms.—£1400 a year.—Panel (250) and Cash and General PRACTICE in Eastern Suburb for disposal by easy terms of payment. Very safe investment. Hardly any night work.—Apply, No. 6217, care of Mr. Percival Turner 4, Adam-street Strand, W.C. 2

Bucks.—A Cash and Panel Practice, situated in an industrial district, and producing over £1000 per annum. Panel value £340, and an appointment £240 per annum. Fees 2s. to 5s. Excellent house. Premium one year's purchase or near reasonable offer.—Quote Folio 766, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Sussex.—A General Practice, situated in a Country Town, and producing about £1000 per annum. Small panel. Fees 2s. 6d. upwards. Excellent house, with large gardens, &c.; rent £75 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 764, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Over £800 a year.—Hospital Town, within 100 miles.—Panel nearly 1000. Good corner house in Residential district. Fees from 2s. 6d. upwards. Great scope. Partnership introduction long as desired. Personally visited and investigated. Premium about £700.—Apply, No. 6183, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Berks.—An old-established General PRACTICE, situated in a good country district, and producing about £650 per annum. Panel list 470. Fees 2s. 6d. to 12s. 6d. Excellent house, containing four bedrooms, &c. Very large garden. Rent £56 per annum. Premium three-quarters of a year's purchase.—Quote Folio 989, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Kensington. — An old-established Non-dispensing and Non-panel PRACTICE, situated in a good district, and producing about £1400 per annum. Fees 5s. to 21s. Midwifery 10 to 25 guineas. Excellent house, situated in a good position and containing six bedrooms, &c.; rent £120 per annum. Premium one year's purchase or near reasonable offer.—Quote Folio 1008, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Death Vacancy.—Within 70 miles, in thriving Manufacturing Town of over 90,000. Income about £600. Panel 1000, and many better-class patients. Good house and large garden; rent £50. Established twenty-four years. Locum in charge. Will be sold for first reasonable offer.—Apply, No. 6202, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

S.E. Coast.—An old-established look-up PRACTICE, situated in a good district, and producing over £700 per annum. Very small panel. Fees 2s. 6d. to 10s. 6d. Rent £35 per annum. Ample scope for increase. Premium one year's purchase, payable £200 down and the balance by instalments, spread over a period of two years.—For further particulars quote Folio 1010, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Southern County.—About £600 a year. — Old-established unopposed PRACTICE. Residential Country Town on rail within 100 miles. Union appointment £230. Panel about 600 at 9s. Good house and garden, tennis lawn, &c. Easily worked. Great scope. Hunting district. Vendor retiring.—Apply, No. 6140, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

For Disposal, Practices or Partnerships.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

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Urgent Sale.—Easy Terms.—Within 100 miles.—Unopposed Country PRACTICE of £450 a year and scope. Vendor selling through illness. Appointments and panel worth £250. Good detached house, large garden, tennis lawn, orchard, &c.; rent £40. Sandy soil. Easily worked. Rail close. Premium £400, part by instalments.—Apply, No. 6127, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2

Over £2000 a year.—London, N.W.—Very old-established good Mixed PRACTICE. Easily worked; hardly any night work. Panel £800 a year. No conveyance required. Large house and garden in open residential locality. Partnership introduction as long as required. Premium one year's purchase on average receipts.—Apply, No. 6218, care of Mr. Percival Turner (sole agent), 4, Adam-street, Strand, W.C. 2, who has known the Practice many years.

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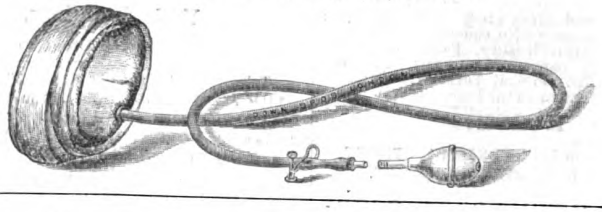
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Vide LANCET, Oct. 27th, 1917.



GRAND PRIX.
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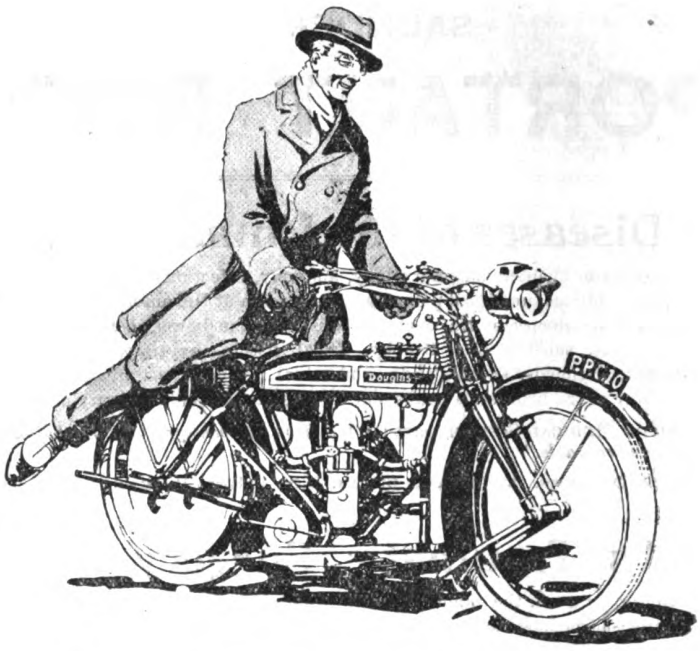
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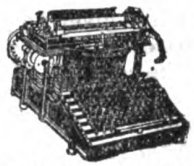
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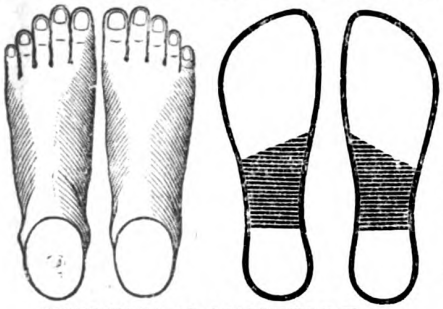
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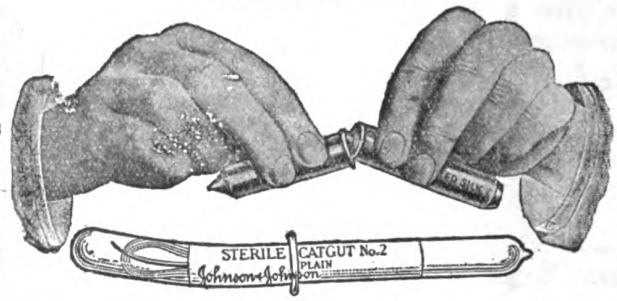
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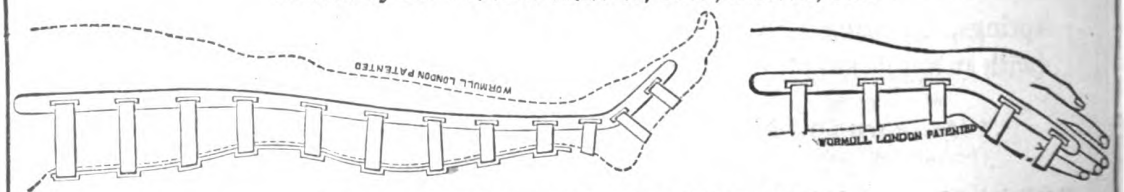


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Angier's Emulsion has a specific palliative influence upon the symptoms of phthisis—fever, night sweats, cough, expectoration and exhaustion are ameliorated by its use.

Angier's is pleasant to take, will not become distasteful, and in most cases of phthisis its use will obviate the necessity of administering depressing or narcotizing cough sedatives.

FREE SAMPLES TO THE MEDICAL PROFESSION.

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STOVAINE

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USED IN THE SAME WAY AND AS EFFICACIOUS AS COCAINE

Does not create a habit and does not give rise to headaches, nausea, vertigo or syncope. :: :: *Literature on demand.*

NO HOME OFFICE LICENSE REQUIRED

Cheaper than Novocain and Benzocain and obtainable promptly in practically unlimited quantities from the manufacturers:

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Send us a Post-card for Samples of LACTOPEPTINE to prescribe in a case of Flatulent Dyspepsia or Infantile Diarrhœa.

1. No one has successfully imitated the digestive value of Lactopeptine.
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3. Lactopeptine is one of the certainties of Medicine, and in this respect ranks with quinine. :: :: :: :: :: ::
4. INDICATIONS: Dyspepsia, Infantile Diarrhœa, Acute Indigestion, Morning Sickness, Impaired Nutrition, Flatulent Dyspepsia. :: ::

When prescribing, specify in all cases Lactopeptine (Richards).
Supplied in ½ oz., 1 oz., 4 oz., and 8 oz. bottles.
John Morgan Richards & Sons, Ltd., 46 Holborn Viaduct, London, E.C.

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POWDER TABLETS ELIXIR

Prescribed by the Medical Profession for 35 years.
The LANCET (London, Eng.) describes it as—"Mr. Benger's admirable preparation."

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BENGER'S FOOD is a cereal flour free from indigestible and irritant particles and scientifically combined with natural digestive principles, which cause it to become, after preparation, one of the most easily assimilated and highly nutritive foods extant, and one which leaves very little insoluble or irritant residue.

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The effect is that the casein in the milk, which otherwise would form tough indigestible casein curd in the stomach, can only separate into minute flocculae; in addition both the protein and carbohydrate material in the food itself are partially converted, so as to be easily assimilated by weakened digestive systems.

This explains why Benger's is frequently retained when all other foods are rejected—why it can be taken by the most delicate infant, and by persons prostrate with illness.

Benger's Food

for INFANTS, INVALIDS AND THE AGED,
is sold throughout the World by Chemists, &c., in sealed tins.

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BENGER'S FOOD, Ltd., Otter Works, MANCHESTER, Eng.

Branch Offices:—NEW YORK (U.S.A.), 90, Beekman Street. SYDNEY (N.S.W.), 117, Pitt Street.
And Depôts throughout CANADA.

N.B.—BENGER'S FOOD is the direct outcome of the pioneer work on digestive ferments, by the late Sir William Roberts, M.D., F.R.S. and the late Mr. F. Baden Benger F.I.C., F.C.S. in 1880, since when it has been the premier dietetic preparation of its kind in the British Empire.

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All the Standard Strains
T.R., P.T.R., B.E., T.O., P.T.O.
for
Therapeutical & Diagnostic Purposes.

In all dilutions or concentrations for Hospitals or private practice.

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Primary Virulent Cultures
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All varieties in various strengths and combinations.

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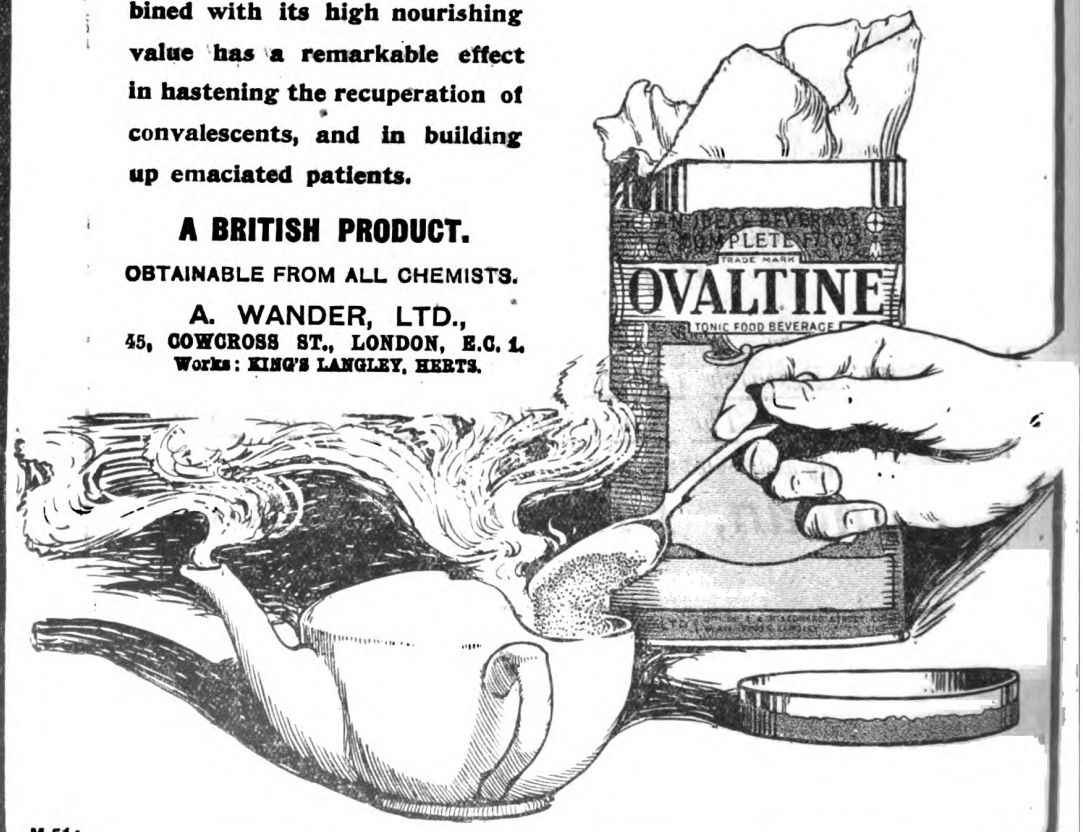
OVALTINE

TONIC FOOD BEVERAGE

IN THE SICK ROOM.

The ease of preparation of "Ovaltine" is an obvious advantage. The granules on being dropped into hot milk dissolve in a few seconds. Troublesome and tedious cooking processes are thus avoided.

A cup of "Ovaltine" contains as much nourishment as three eggs, and is digested and absorbed with the minimum of strain to the digestive functions. Its flavour is always acceptable even to the most fastidious and during prolonged courses. "Ovaltine" is distinguished from ordinary invalid foods in being unusually rich in organic phosphorus compounds. This combined with its high nourishing value has a remarkable effect in hastening the recuperation of convalescents, and in building up emaciated patients.



A BRITISH PRODUCT.

OBTAINABLE FROM ALL CHEMISTS.

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HORMONE THERAPY

THE undermentioned preparations of the glands of internal secretion are offered with full assurance as to their identity and quality. While the therapeutic indications for some of them are well established, the sphere of others is not yet clearly defined, and these are supplied without recommendation being implied. Reference is suggested to articles which appeared in THE PRACTITIONER, November, 1917 (p. 474), also January, February, and August, 1915; THE MEDICAL PRESS, August 16, 1916, November 29, 1916, November 7, 1917; ENDOCRINOLOGY, January, 1917, &c.

ANTERIOR LOBE PITUITARY GLAND TABLETS (P., D. & Co.)

Tablets representing 2½ grains of the desiccated substance are supplied in bottles of 25 and 100; 5 grains, in bottles of 50 and 100.

POSTERIOR LOBE PITUITARY GLAND TABLETS (P., D. & Co.)

Tablets representing 3 grains of fresh substance are supplied in bottles of 25.

PITUITRIN (P., D. & Co.)

This physiologically standardised extract of the posterior lobe of the pituitary body is supplied in ampoules of 0·5 and 1 c.c., also in vials of 10 c.c.

SUPRARENAL GLAND, DESICCATED (P., D. & Co.)

In bottles of 1 ounce.

SUPRARENAL GLAND CAPSULES (P., D. & Co.)

and

SUPRARENAL GLAND TABLETS (P., D. & Co.)

Each capsule or tablet represents 2 grains of the desiccated gland. In bottles of 100.

ADRENALIN CHLORIDE SOLUTION, 1 in 1000 (P., D., & Co.)

This first-introduced solution of the active principle of the suprarenal gland is supplied in ampoules of 0·5 c.c., also in vials of 10 c.c. and 1 fluid ounce. Particulars of other Adrenalin preparations will be forwarded on request.

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The prepared yellow granular material from the ovaries of animals. In bottles of 1 ounce.

CORPORA LUTEA CAPSULES (P., D. & Co.)

Each capsule contains 5 grains of the desiccated substance. In bottles of 25 and 100.

CORPORA LUTEA SOLUBLE EXTRACT (P., D. & Co.)

For hypodermic administration. In ampoules of 1 c.c.

THYROID GLAND, DESICCATED (P., D. & Co.)

Prepared from selected healthy glands. Free from ptomaines. Assayed and guaranteed to contain not less than 0·2 per cent. of iodine. Supplied in bottles of 1 ounce.

THYROID TABLETS (P., D. & Co.)

Prepared from the foregoing assayed product. Supplied in bottles of 100, 500, or 1000 tablets of the following strengths:—¼, ½, 1, 1½, 2, 2½, 3, 5, or 10 grains of *fresh gland* (corresponding to 1/10, 1/5, 1/3, 2/5, 1/2, 3/5, 1, or 2 grains of *desiccated gland*, respectively).

THYROPROTEIN TABLETS (P., D. & Co.)

Tablets containing 1/50, 1/25, or 1/10 grain of thyroprotein (the pure proteid of thyroid gland separated from the inert substance) are supplied in bottles of 50 tablets.

THYROPROTEIN SOLUTION (P., D. & Co.)

For hypodermic administration of the active principles of the thyroid gland. In ampoules of 1 c.c.

PARATHYROID GLAND TABLETS (P., D. & Co.)

Tablets containing 1/10 grain of the desiccated substance, carefully separated from extraneous material, are supplied in bottles of 100.

TETRAGLANDULAR TABLETS (P., D. & Co.)

Each tablet contains 3/4 grain Desiccated Suprarenal Gland, 1/3 grain Desiccated Pituitary Gland, 1/3 grain Desiccated Thyroid Gland, and 1/40 grain Desiccated Parathyroid Gland. In bottles of 25 and 50.

PINEAL GLAND TABLETS (P., D. & Co.)

Each tablet represents 1/2 grain of fresh pineal gland substance from young cattle. In bottles of 25 and 100.

THYMUS GLAND, DESICCATED (P., D. & Co.)

In bottles of 1 ounce.

THYMUS GLAND CAPSULES (P., D. & Co.)

Each capsule contains 2 grains of the desiccated substance. In bottles of 100.

Further particulars of the above-mentioned will be sent on request.

PARKE, DAVIS & CO., 50-54, BEAK ST., REGENT STREET, LONDON, W. 1.

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Extract from the "Daily Mail," October 24th, 1917.

WINTER MILK FOR BABIES

LORD RHONDDA'S BIG CONTRACT.

A supplementary supply of milk for infants has been arranged by the Ministry of Food, who have contracted for what is considered to be an adequate quantity of dried milk which can be supplied to medical officers of health and to institutions needing it during the winter.

The total amount of full cream dried milk which may be available approximates 2,200 tons, representing nearly 4,000,000 gallons of whole milk when reconstituted. The Ministry state that this milk will be suitable for infant feeding.

The Ministry of Food has purchased 2,100 tons

of

Glaxo

FULL CREAM DRIED MILK

No greater tribute has ever been paid to a Baby Food than the placing of this enormous order by the Ministry of Food—the Official Board appointed by Parliament for controlling the food supplies of the country.

Could any stronger proof be offered of the suitability of GLAXO Full Cream Dried Milk for infant feeding?

Samples, Analysis, & Bacteriological Report Post Free on Application to

GLAXO (Medical Dept.),

155, GREAT PORTLAND STREET, LONDON, W. 1.

Proprietors: J. Nathan & Co., London and New Zealand.

F. 7. xi. 17.



ROYAL VINOLIA TALCUM POWDER.

FOR TOILET, NURSERY, AND MASSAGE.

THIS absorbent, antiseptic powder can be recommended with every confidence for use in the Nursery or Sick Room. It soothes and refreshes by keeping the skin cool and comfortable. It prevents chafing and does not clog the pores.

Royal Vinolia Talcum Powder is of special benefit during massage treatment when excess perspiration manifests itself, as, unlike many other preparations used in these conditions, it has no irritating effect on the skin.

Royal Vinolia Talcum Powder contains no irritating perfume. Its delicate odour is pleasant without being obtrusive. The special method of packing makes it the most convenient and economical form for use in private practice or hospitals.

In Drums with Sieve Tops 1/-

Vinolia Baby Soap, *a guaranteed neutral and pure vegetable soap. Specially recommended for the tender skins of infants.* 4½d. *per tablet.*

Samples sent free on request to members of the Medical Profession.

VINOLIA COMPANY LIMITED, LONDON - PARIS.

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37 Times More Powerful than Lithia.

Urodonal

Dissolves and eliminates *URIC ACID.* Purifies the Kidneys and Frees the Articulations. Preserves from Arterio-Sclerosis and Obesity.

RHEUMATISM. GOUT. LITHIASIS.

3 teaspoonfuls per day, each teaspoonful in a glass of water, taken between meals. Acute conditions: 3 tablespoonfuls per day. No Contra-indication.

DERMATOSIS. NEURALGIA. OXALURIA.

Price 5/- and 12/- per Bottle.

COMMUNICATIONS—Academy of Medicine, Paris, Nov. 10th, 1908. Academy of Sciences, Paris, Dec. 14th, 1908.

GOLD MEDAL, FRANCO-BRITISH EXHIBITION, 1908.
Highest Awards: Nancy, 1909. Quito, 1909.
Hors Concours, San Francisco Exhibition, 1915.

Adopted by the **FRENCH ADMIRALTY** (Ministère de Marine) with the approval of the **BOARD OF HEALTH.**

JUBOL.

"Re-education" of the Intestine.

Constipation, Enteritis, Hæmorrhoids, Indigestion, Skin Blemishes, &c., &c.

Dose: 1 to 3 tablets every night on retiring.

PRICE 5/- per box.

GLOBÉOL.

Powerful Blood Tonic.

Anæmia, Nervous Exhaustion, Neurasthenia, General Debility, Tuberculosis, Convalescence, &c.

Acute Conditions: 8 pills daily with midday meal.
Chronic Conditions: 4 pills daily with midday meal.

PRICE 5/- per bottle.

JUBOLITOIRES.

Scientific Suppositories.

ANTI-HÆMORRHAGIC. SEDATIVE. DE-CONGESTING.

Hæmorrhoids, Rectitis, Anal Fistula, Abscesses, and all unhealthy conditions of the Recto-anal Tissues.

One suppository to be introduced into rectum morning and night after motion of the bowels.

PRICE 5/- per box.

PAGÉOL.

Powerful Urinary Antiseptic.

Gonorrhœa, Cystitis, Prostatitis, Catarrh of the Bladder, Renal Tuberculosis, Hypertrophy of the Prostate, and all Diseases affecting the Urinary System.

Acute Conditions: 16 capsules daily.
Chronic Conditions: 6 capsules daily.

PRICE 5/- and 11/- per box.

GYRALDOSE.

Powerful Antiseptic for Local Gynæcological Use.

RELIABLE. NON-INJURIOUS. NON-STAINING.

Leucorrhœa, Metritis, Salpingo-ovaritis, Vaginal Discharges, &c.

Prophylactic and Hygienic Use: One teaspoonful to a quart of warm water, once or twice daily. *Curative Purposes:* Two to three teaspoonfuls to a quart of hot water, twice daily, or oftener if necessary.

PRICE 4/- per box.

VAMIANINE.

New Scientific Preparation

for the Treatment of

Syphilis, Chronic Skin Affections, Psoriasis, Acne, Eczema, Erythema, &c., &c.

Dose: 4 Pills daily, or more if necessary.

PRICE 11/- per bottle.

FANDORINE.

Internal Treatment for Women's Diseases.

Metrorrhagia, Dysmenorrhœa, Pregnancy, Lactation, Irregularities, Pains, Abnormalities, &c.

Acute Conditions: 15 to 20 tablets per day at regular interval as required. *Chronic Conditions:* 8 tablets per day between meals.

PRICE 5/- and 11/- per bottle.

FILUDINE.

Employed in all Liver Disorders.

Malaria, Diabetes, Cirrhosis, Sluggish Liver, Tuberculosis, &c.

Acute Conditions: 2 tablets three or four times daily before meals.
Chronic Conditions: 2 tablets twice or thrice daily before meals.

PRICE 11/- per bottle.

SINUBÉRASE. Complete Treatment for Intestinal Disorders.

Enteritis, Dysentery, Diarrhœa, Cholera, Typhoid, Infectious Diseases, Dyspepsia, Constipation, &c.

Acute Conditions: 12 tablets daily at the commencement of meals. *Chronic Conditions:* 4 to 6 tablets daily.

PRICE 5/- per bottle.

All the above Remedies are prepared exclusively at **CHATELAIN'S Laboratories, 2 & 2 bis, rue de Valenciennes, Paris**
Can be obtained from all Chemists and Stores, or direct from the Sole British and Colonial Agents—

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Trial Supplies and Full Descriptive Literature sent on application to **HEPPELLS** *at the above Address.*

TRADE MARK A.D.1715.

Advances in Treatment

CONSTIPATION

"Byno Chrismol"

(TRADE MARKS)

marks a new departure in the treatment of Chronic Constipation, etc. It presents 50 per cent. by volume of "Chrismol," a specially selected and purified Russian mineral oil in intimate combination with the "Allenburys" Malt Extract.

"Byno Chrismol" possesses the following advantages:



It is prepared with mineral oil of the proper viscosity and chemical constitution to ensure efficient lubrication with a complete absence of bye-effects.

The intimate combination of the mineral oil and "Allenburys" Malt Extract without an emulsifying agent, ensures the maximum activity of the oil as a lubricating agent, and removes the inconvenience that sometimes follows insufficient admixture of the lubricant with the intestinal contents.

It possesses no oily taste. The "Allenburys" Malt Extract present assists digestion and assimilation.

"Byno Chrismol" is specially indicated in Chronic Constipation with symptoms of auto-intoxication, Intestinal Stasis, Mucous Colitis and in the convalescent stage of Typhoid Fever; also after Child-birth, during the nursing period and whenever a simple laxative is required by child or adult.

DOSE: A dessert-spoonful, or more, two or three times a day.

In bottles at 2/6 and 4/6 each. **Sample free on request.**

Allen & Hanburys Ltd., London

37 Lombard Street, E.C.3. 7 Vere Street, W.1.

TRADE MARK A.D. 1715.

Advances in Treatment

A Sedative and Analgesic.

"Alopon"

Registered Trade Mark.

The Hydrochlorides of the Mixture of Alkaloids contained in Opium.

Readily Soluble. Easily Absorbed.

"Alopon" has the physiological activity of Opium *in excelsis.* It is especially valuable as a **Gastric** and **Intestinal Sedative;** also as a **Sedative in Nervous Conditions** and in **Diseases of the Respiratory Tract.**

"Alopon" is also a valuable **Analgesic** and **Hypnotic** for use before operation as an adjunct to general anæsthesia.

Preparations of "Alopon."

"Alopon" Powder	Dose: $\frac{1}{6}$ to $\frac{1}{3}$ grain ...	1 gramme bottles **2/6** each
"Alopon" Tablets, for Oral use, $\frac{1}{8}$ grain in each	Dose: 1 or 2 tablets ...	Bottles of 20 **1/4**; 100 **6/-**
"Alopon" Solution, 2 per cent., for Oral use	For repeated dose: 5 to 15 m. For single dose: 15 to 30 m.	1 oz. bottles **1/6**; 4 oz. **4/6**
"Azoule" "Alopon" (sterile glass capsules) $\frac{1}{3}$ grain in each ...		Boxes of 6 or 12, **3/-** per doz. "Azoule" doses
"Azoule" "Alopon"-Atropine, gr. $\frac{1}{3}$, gr. $\frac{1}{150}$		Boxes of 6 or 12, **3/-** per doz. "Azoule" doses
"Azoule" "Alopon"-Scopolamine, gr. $\frac{2}{3}$, gr. $\frac{1}{150}$ ...		Boxes of 6 or 12, **4/-** per doz. "Azoule" doses
"Alopon" Hypodermic Tablets, gr. $\frac{1}{3}$		...Tubes of 25, **3/-** each

☛ *Descriptive Leaflet will be forwarded on application.*

Allen & Hanburys Ltd., London.

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7 Vere Street, Cavendish Square, W. 1

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37 Lombard Street, E.C. 3

TRADE MARK
A.D. 1715.

In Convalescence After Acute Disease.

'Byno' Hypophosphites

TRADE MARK

"One of the most popular tonics of the day."
British Medical Journal.

"Byno" Hypophosphites combines the nutritive and digestive principles of the finest Malt Extract with Hypophosphites, a powerful tonic nerve food. It is much superior to the official syrup, and in many years' clinical experience has given most gratifying results. "Byno" Hypophosphites may be taken when ordinary tonics cannot be tolerated.

As a General Tonic

"Byno" Hypophosphites is unrivalled; it contains a variety of principles which each have their particular therapeutic value.

Tuberculosis

In the wasting of Tubercular Cachexia it tends to reduce the temperature, improve the appetite, increase the weight, and rehabilitate the nervous system.

Typhoid Fever

In the slow convalescence from Typhoid Fever it is an easily absorbed and highly nutritious tonic food. "Byno" Hypophosphites helps the enfeebled digestion, decreases the anæmia, and improves the general tone of the nervous system. Owing to the presence of 'Bynin,' it is not constipating in its action.



FORMULA:

Calcium Hypophosphite	2 gr.
Potassium ,,	2 ,,
Sodium ,,	2 ,,
Iron ,,	¼ ,,
Manganese ,,	¼ ,,
Cinchona Alkaloids	1½ ,,
Nux Vomica ,, *Equal to Strychnine*	⅛₀ ,,
Bynin" Liquid Malt	1 oz.

Influenza and Malaria

For those debilitated by Influenza, Malarial and Tropical Diseases, it has proved itself an invaluable restorative and reconstructive.

In Old Age

For the Aged and Infirm there is no preparation so acceptable and so readily assimilated. It stimulates a flagging heart and is not only a tonic but a food.

Brain-Fag

It is surprisingly successful in cases of cerebral exhaustion with digestive disturbance, and constitutes a mild, yet efficient invigorator in general brain-fag. "Byno" Hypophosphites restores tone to the heart muscle and arteries, and is a blood-producing agent as well as a concentrated nutrient.

'Byno" Hypophosphites is one of the best tonics ever put forward for combating the after-effects of severe illness or as a general invigorator when the system is enfeebled. It may be prescribed with confidence to enrich the blood, strengthen the gastro-intestinal functions, give tone to the nerves, and nourish and vivify the whole organism.'

Prices: In bottles 3/- & 5/6 each. Sample sent free on request.

ALLEN & HANBURYS LTD., Lombard St., LONDON.

Clinical Experience

is the ultimate test by which the value of any article, medicinal or dietetic must be determined.

During the past fifteen years the practising physician has had ample experience of the usefulness of Sanatogen in nervous disorders, disturbances of metabolism and organic diseases, gout, uric acid diathesis, nephritis, cardiac disease, anæmia, and most varieties of malnutrition.

He knows that Sanatogen is the only therapeutic food **proved** to furnish the body cells with phosphorus and nitrogen in true synthesis, and therefore truly assimilable. And he knows that the clinical evidence for Sanatogen is fully corroborated by laboratory and physiological tests.

SANATOGEN

is now the absolute property of an all-British company, and is manufactured at Penzance by the original unique processes on which its efficacy depends.

Though the cost of manufacture has greatly increased, **the retail prices are unchanged**; and it is worth noting that these work out at only about sixpence per day for the usual dosage. We mention this because many physicians regard Sanatogen as an expensive product, though in reality it is cheaper in use than many less valuable preparations which are not so regarded.

For Samples and Literature apply to—

GENATOSAN, LTD. (British Purchasers of the Sanatogen Co.),
Chairman: Lady Mackworth,
12, CHENIES STREET, LONDON, W.C. 1.

(Sanatogen will later on be re-named "Genatosan" to distinguish it from so-called substitutes.)

COMBATS SERIES, 172—SIAMESE

For Treatment of Gonorrhœa

TRADE **'SOLOID'** MARK

BRAND

TRADE **'NIZIN'** MARK

'Nizin' is a Zinc Salt of Sulphanilic Acid

Stimulating antiseptic for injections. Non-irritating and non-toxic in the strengths recommended. Solutions of gr. 2 to gr. 6 to the ounce highly successful. Gr. 1 to the ounce gives good results in eye affections.

'Soloid' 'NIZIN,' gr. 2 and 0·15 gm. are supplied in bottles of 100 at 1/0; gr. 20 and 1 gm. in bottles of 25 at 2/0 and 1/8 per bottle, respectively. 'NIZIN' is supplied in bottles of 1 oz. at 1/0, 4 oz. at 3/6, and 16 oz. at 12/0 per bottle.

TRADE MARK **'SOLOID'** BRAND

Silver Proteinate

Silver Proteinate contains 8·3 % of silver

Replaces German Protargol. Of value in gonorrhœa, ophthalmia, etc. The 'Soloid' product is freely soluble, and solutions of strengths ordinarily used are non-irritating. Four grains to the ounce forms approximately a 1 % solution (½ % to 2 % usually employed, 10 % or stronger also used).

'Soloid' Silver Proteinate, gr. 1, is supplied in bottles of 100 at 1/6; gr. 4 in bottles of 25 at 1/4 and 100 at 4/0 per bottle.

A Powerful Antiseptic for Infected Wounds, etc.

TRADE **'SOLOID'** MARK

BRAND

TRADE **'TOLAMINE'** MARK

Sodio-p-Toluenesulphonchloroamide, referred to as Chloramine-T in the B.M.J., Jan. 29, 1916, *page* 160

Its germicidal action, molecule for molecule, is stated to be about four times that of sodium hypochlorite. Non-corrosive, non-coagulant and practically non-toxic.

Supplied as follow:
gr. 8·75, bottles of 100, 4/0 per bottle
gr. 87·5, tubes of 10, 3/6 per tube

BURROUGHS WELLCOME & CO.
LONDON
NEW YORK MONTREAL SYDNEY CAPE TOWN
MILAN SHANGHAI BUENOS AIRES BOMBAY
All communications intended for the Head Office should be addressed to
SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room: 54, Wigmore Street, W.



Scene depicting the sending of an ultimatum by a King of ancient Siamese-Cambodia. From a gallery in a pavilion hastily erected in the centre of an armed camp, the sovereign gives his message to his envoys prostrated before him. "Go to King Sauriyo, tell him it is our will to have his kingdom, his crown, his wealth. Should he refuse, you will invite him to war which we will impose upon him by the puissant strength of our arms." Date, the Middle Ages.

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"MALTINE"

"Maltine" presents the proteids, carbohydrates, and organic phosphates of malt in an agreeable, convenient, and readily assimilable form. It is standardised in diastase, concentrated, and semi-liquid, and perfectly soluble.



Special Indication:—

In Infant Feeding, to humanise cow's milk and prevent constipation.

Full particulars, together with complete Feeding Tables, giving the proportions of milk and water for different ages and periods of feeding, as also samples of "MALTINE," may be obtained free of charge by Medical Men on application to the Company.

"MALTINE" WITH IRON.

Each Fluid Ounce contains— IRON PYROPHOSPHATE ... ... 8 grains.

This is a particularly bland and assimilable preparation of Iron, in which the astringency of the ferruginous salt is counteracted by the slightly laxative action of the "MALTINE" base.

The word "MALTINE" is our Trade Mark.

In prescribing please specify "MALTINE COMPANY."

THE MALTINE MANUFACTURING COMPANY, Limited,
183, ACTON VALE, LONDON, W. 3,
Will be pleased to send Samples Free of Charge to Medical Men.

CARNRICK'S "LIQUID PEPTONOIDS."

Beef, Milk, and Wheat (Pre-digested).

"LIQUID PEPTONOIDS" is a sustaining, reconstructive, mildly stimulating fluid nutrient, ready for immediate absorption and assimilation. It is aseptic, eminently palatable, free from extractive material, completely pre-digested, and sufficiently concentrated to nourish a patient for a considerable time during critical stages of severe illness when other forms of food are refused.

THE LANCET writes:—"A very valuable food .... a very powerful and agreeable tonic and stimulant."

SAMPLES FREE TO MEDICAL MEN.

CARNRICK & CO., Limited, 183, Acton Vale, London, W. 3.

An Introduction

TO A DEBATE ON

THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT.

Delivered before the Medical Society of London on Nov. 12th, 1917,

BY T. D. LISTER, M.D. LOND., F.R.C.S. ENG.,
PHYSICIAN TO THE MOUNT VERNON HOSPITAL FOR CONSUMPTION.

GENTLEMEN,—When I was asked by your President to make some remarks introductory to a discussion on the value and limitations of sanatorium treatment, I was struck by two things. The first was the opportuneness of such a discussion by this old, independent and responsible society. It was surely a keen sense of the present need of reconsideration of this matter that led your President to select it. The second was the opportunity afforded to me of airing and no doubt clarifying some of my own rather heterodox views in a pleasant atmosphere.

THE PRESENT POSITION.

No longer, unfortunately, can we speak of the losses by tuberculosis as being greater than the ravages of war. War has crippled our resources for dealing with social problems, of which tuberculosis is perhaps, if not certainly, the greatest, at any rate the index disease. War has done more, because it has led by its disturbance of pre-existing social conditions to an increased incidence of the disease. We are therefore wise to take stock of our present methods and endeavour to form a judgment as to their value, and limitations.

From the annual report for 1916–17 of the medical officer of the Local Government Board we gather that the deaths from pulmonary tuberculosis, as compared with 1913, have increased by 1582 in 1914, 4621 in 1915, and 4490 in 1916 Representing the experience in 1913 by the relative figure 100 the deaths have increased by no less than 12 per cent. Many explanations are suggested in the report. This increase has been associated with an excessive mortality from influenza, as was seen also in the years 1890-91-92 and in 1899–1900. The report emphasises the fact that both men and women in industrial employment have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease; also that the record would almost certainly have been worse but for the organised effort to improve housing conditions in areas with populations swollen by war work; also that there have been overwork and exposure to irritating dust, and, owing to migration, overcrowding under conditions unfavourable to health; also that high wages have led many to refuse sanatorium or other systematic treatment and to the employment of large numbers of semi-invalids.

For the moment my only comment is to point out how these remarks emphasise the dependence of tuberculosis mortality on environment rather than on infection.

Since 1911 the number of beds available for the treatment of tuberculosis, supposed to be in the main sanatorium beds proper, has doubled, and is now 11.893, as against 5500. A high proportion of the patients in these beds have been of what is known as the hospital type, which are defined as cases of advanced disease or of chronic consumption often requiring prolonged treatment, especially at the request of the medical officers of the institution. Not infrequently the same bed is occupied by a single patient for six or nine months who should have been replaced by earlier cases. Tuberculosis dispensaries have increased over twelve-fold in the same period, from 25 to 30 in 1911 to 371 in 1917.

THE LANCET on Oct. 20th called attention to certain criticisms suggested by the collation of this greatly increased activity in measures supposed to be directed towards the administrative control of tuberculosis with the increased mortality experienced.

ADMINISTRATIVE METHODS.

Those interested in departmental explanations and deductions should study the report carefully. A large part is devoted to meeting such criticism as was inevitable. I think the key to what seems to me to be a confusion of ideas in the report is to be found in what I regard as one of the most dangerous doctrines in modern public health administration—namely, the statement made therein that measures for the treatment and prevention of tuberculosis are to a large extent identical. This doctrine, if by treatment is meant therapy, is capable of indefinite extension in this and many other diseases. If adopted generally it could only have the effect of placing our great liberal profession of medicine entirely and permanently under red tape rule. It grieved me to hear Sir William Osler support it in regard to syphilis when he delivered the Lettsomian lecture in this room. If treatment does not mean therapy, the allocution is to my mind mere phrase-mongering.

I cannot conceive that treatment and prevention should be regarded as identical. The former is our daily ambulance work, dealing with the units of mankind, and therefore possessing and demanding the greatest human interest. The latter is a matter of strategy and large ideas, ignoring the units and demanding the cold forces of bureaucracy. Many recent developments in the control of clinical work by various departments, arising out of ill-considered agitations, are, in my opinion, leading or likely to lead to a lack of progress in medicine, by creating stultifying cul-de-sac medical occupations, the accumulation of enormous masses of almost useless reports, and a smug complacency in their publication.

Treatment may some day be coördinated with public health work, factory and school work, under a Ministry of Health. At present we see a series of different authorities trying to strengthen their hold on the practice of medicine. Some will, no doubt, in time produce the inevitable statistics of the number of cases treated. Such statistics may unwisely be regarded as partly justifying a claim for expansion into a ministry, endowed with powers over other pre-existing authorities. I hope the coming Ministry of Health will be a bigger and greater thing that the result of inter-departmental rivalry with the winner on top.

No better test subject of administrative methods could have been selected for discussion than the part played by the sanatorium in the control of tuberculosis. It involves a study of its value and limitations both on the clinical or therapeutic side, in relation to the individual patient, and on the preventive or administrative side in relation to the community. It is upon the Fellows of this society and upon those who will collaborate with them to-night and at the subsequent meeting that the onus must fall of making the discussion valuable. I look to those who will follow and correct me to bring forward a diversity of opinions worthy to place before the Medical Society of London and its distinguished President. On no possible subject would it be easier to raise wide issues. Whenever resistance to the temptation to digress becomes impossible, the remedy lies in the hands of the President himself. I have no doubt his kindly warning will suffice to bring us to our proper bearings.

Having thus divested myself of all responsibility as to the value and limitation of the discussion, I will endeavour to put before you some of the questions that seem to call for expressions of opinion. My shortcomings are acknowledged in advance, and I hope that any point overlooked, which comes within the scope of our subject, will be brought forward by those having greater knowledge.

When I asked myself what I thought of the value and limitations of sanatorium treatment I hesitated and was lost in subsidiary questions. These concerned the position of the sanatorium in its therapeutic uses on the one hand, and its national value on the other.

THE VALUE OF THE SANATORIUM IN THERAPY.

1. Selection of cases.

The careful prognostic selection of cases for sanatorium treatment suggested an attractive chain of reflections until I remembered that experts accustomed to handle every group would be here to place before you actual experiences. From them we shall learn how best to advise patients of any clinical and social class who may be in doubt as to entering a sanatorium.

I may be permitted to maks one comment. Though the reaction of the human organism to pulmonary tuberculosis is the chief guide in estimating the possible results of sending patients into institutions, we must take into account their

existing environment. Other things being equal, benefit will accrue from sanatorium treatment in proportion as this supplies a better environment. It is impossible to overestimate the importance of the physician in charge of a sanatorium as part of that environment. I think we shall benefit any suitable case by so much as we are able to improve management and hygiene. I seem to have seen better results from sanatorium treatment in certain bad cases, classified according to the academical rules, when they have come from the industrial group, than in certain good cases coming from what one scarcely dares to call nowadays a higher social class. The industrial patient sometimes gets a better chance because he gets a bigger change.

Whether this belief is justified or not we shall learn during the discussion. We shall be glad to hear all who will speak to us with authority as to the effect of selection of cases on the value and limitation of sanatorium treatment.

SANATORIUM THERAPY AND TREATMENT AT HOME.

The relative value of treatment at a sanatorium as compared with treatment at home arises as a natural sequence of the consideration of selection. About a year ago I asked a senior lecturer on medicine at a great London school what he taught students on this point. He replied that he met inquiries with the somewhat humorous dictum that a sanatorium is a very suitable place for consumptive paupers or fools. There is a germ of truth in the first half of his selection. Not seldom have I met with a private medical attendant who has warned patients against going into a "hotbed of the disease." Occasionally I have allowed my opinion to be biassed by a patient or a doctor in whom I have had confidence, so that I approved of treatment at home. Usually, after taking precautions to secure adequate home treatment I have had reason for regret. Perhaps the precautions were not adequate. Possibly some of these cases, even if sent away, would have ended as sanatorium failures. All the details which make up the routine of the health re-education of the consumptive must attain to a higher power in the sanatorium. Compared to home treatment, there is as much difference as between a thorough school education and a few interrupted private lessons.

But I think too much is sometimes claimed as the result of the institutional training of patients. The patient nearly always thinks in terms of treatment and cure. The lessons learnt are more often than not, like those learnt at school, largely forgotten after the leaving examination. The short educational treatment in sanatoria of the industrial class of patient is even a greater failure. Few medical officers are able to impress upon dull minds any reasonable view of the nature and needs of this disease in four or even 12 weeks. This is not to be wondered at, seeing that a medical qualification and years of general clinical work only too often fail to do so among ourselves. The skilful private health-tutor is a rare bird. The born leader and teacher is not found even in every sanatorium.

The time devoted to sanatorium treatment should be much longer than it usually is for every class of patient. It need not necessarily be in the same institution throughout the whole period to secure the best results. To follow up sanatorium treatment at home successfully requires the highest self-discipline, a quality not more conspicuous among consumptives than among others. Hence I do not attach much value to the "rabbit hutch in the back garden" type of home treatment.

Home treatment demands self-training and self-discipline even more of our own profession than of the patient. To emphasise the value of open air is a good thing, but it is only a small part of sanatorium therapy. Continual scientific guidance by a trained medical man is an essential concomitant before much is to be achieved clinically. Home treatment and after-treatment suffer from the lack of thorough teaching of common diseases. An adequate knowledge of these should be an essential requisite in qualifying examinations. The General Medical Council could do more by amended regulations than all the private and public machinery set up hitherto for the treatment of tuberculosis.

Home treatment before and after sanatorium treatment has a powerful effect on results. It is possible to argue that sanatorium treatment can be carried out at home. But those capable of carrying out sanatorium treatment efficiently are even rarer in domestic practice at present than in institutions. Hence arise the frequently expressed aspersions on the general practitioner and the setting up of an ever-increasing series of costly contrivances, such as tuberculosis officers, dispensaries, care committees, and after-care colonies. The original value that might have been ascribed to the tuberculosis dispensary seems to me to have become obscured by its clinical expansions. I will refer again later to these, but here I will only say that sanatorium treatment cannot, as a rule, be carried on at home because neither the home nor the treatment available is likely to lead to success. This is, of course, only a broad statement referring to the mass of disease and the majority of homes where it occurs. I do not ignore certain excellent experiments.

Statistical Data.

The value of sanatorium treatment in comparison with home treatment might, perhaps, be estimated by results. These results may deal with the conditions at the end of treatment or with the after-history.

Of the results at the end of treatment I do not know of comparable statistics. Sanatorium statistics should be studied with philosophic doubt. I trust that when we hear the figures relating to immediate and remote results from those speakers who will produce them we shall not let this doubt diminish the importance of the lessons to be drawn from them. The doubt in my mind at the moment arises from a lack of knowledge of successful results when cases are not treated in sanatoria. We cannot ignore pathological evidence. Healed lesions without a history are commonly found. "Everyone has his tubercle." Some seem to have had a good deal and yet recovered to die of something else.

I would like to know, first, the recovery rate of untreated cases classified according to the academic rules. Are there not many cases that would get well anywhere, even, if it exists, in a badly managed sanatorium? I would like to know what margin of sanatorium successes really exists over and above the unknown recovery rate of each group. As I cannot know I may be permitted to doubt. I will allow a large margin. Secondly, we want careful practitioners, not addicted to the "hotbed of disease" prejudice, to tell us how many cases get well when treated at home. Is there no James Mackenzie of Tuberculosis? If there be many such cases one appreciates and sympathises with the desire of sanatorium doctors to get their patients in the earliest possible stage. Early cases must furnish the best recovery rate, whether untreated or treated at home or at the sanatorium. Improved statistics increase the moral force of the object-lesson afforded by the sanatorium, and are therefore desirable. Thirdly, I would like to ask whether financial considerations do not sometimes prevent patients from receiving full benefit from sanatorium treatment? As to comparative cost of home and sanatorium treatment there is much to be said by those speakers who handle various groups of patients. I should say that efficient home treatment was more expensive than at the sanatorium. The high comparative cost of sanatorium treatment is, I think, largely apparent and not real if anything like the same advantages are to be furnished at home. There is one difficulty which applies to all members of the community dependent for a living on their own efforts, and that is the prolonged absence from home required by adequate treatment in a sanatorium. This can only be overcome, or rather palliated, by doing one's best for as long as the patient can remain and trying to secure sympathy and understanding from the patient of what one is doing and teaching. For cases that are improving sanatorium treatment is more often cut short against the wishes of the doctor in charge than not. This desire of the sanatorium doctor to get the best results for his patients is used as an argument in the Local Government report for the earlier discharge of cases to enable them to be replaced by more responsive patients. This seems to lead us back to the difficulties arising from public and professional ignorance. The early case is difficult to get hold of.

Of the results of the after-history of sanatorium cases we hope to hear figures during the discussion. It seems to me that the justification of the sanatorium by the after-history of the patients is an eminently important thing to establish. Personally I have been rather depressed by the after-history of sanatorium patients, even when discharged from institutions as "arrested." The same deductions ought to be made from the list of successes as were suggested for the immediate results. In my experience after-history largely depends on opportunity. Where patients must go back to the same

houses, habits, and haunts wherein they previously lost their resistance they will lose it again. Very few patients can or will change their environment and occupation afterwards. If the occupation were conducted in such a manner and the general environment were such that the resistance regained were not lost the after-history would be better. It seems clear, therefore, that it would not have been lost had these conditions existed before the patient lost his resistance to the disease. Other considerations, of course, arise, but I think most sanatorium doctors would agree that some of their best efforts are ruined when the patients leave. We shall be glad to hear their views.

SPECIAL TREATMENTS AS AIDS TO SANATORIUM THERAPY.

We may ask ourselves whether the value of sanatorium treatment can be increased by the various special "treatments" that have been introduced. More remotely we might suggest that some of these methods may properly be used to replace the sanatorium altogether. Not yet.

A number of special treatments have been introduced from time to time. There are certain points of unanimity in the desires of those advocating special methods. They like to secure very early cases, and they urge the necessity of hygienic methods being employed as accessories. There seems to be a considerable amount of uniformity in the successes obtained in corresponding classes of cases, provided the hygienic or sanatorium method is not omitted. I will not say this is a suspicious circumstance, but I return to my confession of ignorance as to the recovery rate of corresponding groups of cases however treated or untreated. I fear that the public clamour for "cures" may sometimes lead to biassed views among those of us who use special methods.

The late Sir James Goodhart said once that when we come in contact with those who advocate "treatments" we are liable to find ourselves in queer company. This opinion was shared, but differently expressed, by Sir Samuel Wilks. We may perhaps regard the hygienic method of raising resistance as a mere accessory. But I think most of us would say that we have sometimes seen it as the principal factor in the achievement of the results ascribed to special methods, and that these "treatments" are doubtful aids.

I think we should all like to know where we stand in regard to the use of tuberculin. Is the value of the sanatorium method increased by using any of the derivatives of the tubercle bacillus? If so, what are its uses in the many cases of mixed infection, and the relatively few cases where a pure infection can be reasonably inferred?

The association of vaccines for mixed infection, with tuberculin, is a difficult, costly, and complicated business. The very few "successful" lung cases I have seen treated thus are all dead of their disease. Possibly others have had a more fortunate experience. If this is so then these things should be used more largely than they are at present in sanatoria. Personally, I consider that such methods are only adapted for a very small proportion of the total mass that come before us in institutions, that they are better carried out there under full control than in the consulting room or home, except under rare conditions, and that therefore the value of sanatorium treatment can be little affected by them.

Arising out of the use of tuberculin is the question of the precise value of that part of sanatorium treatment which is called auto-inoculation. Is this theory firmly based? What is the actual process, compared to the use of any of the known varieties of derivatives of the tubercle bacillus?

SANATORIUM THERAPY AND DIET.

Closely connected with the increase of resistance that one sees as the result of sanatorium therapy, whether accompanied by the use of vaccine, tuberculin, or auto-inoculation, is the nutrition of the body. May not the carefully planned food scale of the sanatorium, with general attention to digestion, rest and exercise adjusted to meal-times, account for many of these alleged successes? I will not enter into the question of the attention given to nitrogenous food. We know very little about the hæmatology and metabolism of these patients. Did we know more we ought perhaps to re-classify our cases in the light of such knowledge before we can ascertain the real value of sanatorium treatment. There must be some proportion of patients in whom an improved dietary properly regulated is sufficient to turn the scale in the right direction. There must be some in whom improved nutrition, and, if we like to say so, consequent formation of immunising bodies is impossible because of an original fault in their bio-chemistry. If this is so, deductions must be made from the successes on the one hand and from the failures on the other before we can have a real knowledge of the value of the sanatorium.

A more practical question is occasional difficulty arising from the food in a sanatorium being badly cooked, badly served, and, from ignorance of, or lack of sympathy for, human weaknesses, from an unnecessary monotony in the daily menu. For the convenience of the staff and store room there is a melancholy recurrence of the same food after the same intervals in some sanatoria. Loss of interest and loss of appetite result. Patients, staff, and doctors often become institutionalised. There is always a risk of deterioration in official clinicians.

As much as in any other detail the personality and knowledge of the medical officer is all-important in matters of diet. But apart from extreme methods such as zomotherapy, now practically out of date along with over-feeding and excessive milk drinking, diet is part of the general hygienic method.

SANATORIUM THERAPY AND FAMILY HISTORY.

The value of sanatorium treatment as affected by family history may conveniently be considered after these questions of nutrition. In the sanatorium inherited habits of unbalanced feeding can be adjusted in the same way as other errors. Diet is often a matter of family tradition. Further, we know that a type of bio-chemistry is as readily inherited as a blue eye or a pug nose. The manner in which a family resists or succumbs to tuberculosis is of great importance in prognosis. There are patients in whom recovery seems to be hopeless when the disease is once developed because of the strain from which they were bred. Is not this question of importance in making deductions from the figures of failures when we attempt to make a valuation of sanatorium treatment? Vice-versa, is not a history of family recovery of equal importance? The adjustment of sanatorium statistics as compared with other modes of treatment seems to me to demand many difficult and complicated inquiries.

SANATORIUM THERAPY AND PHARMACY.

Another matter in which the value of sanatorium treatment is difficult to assess is the importance to be ascribed to the use of drugs. So far I do not see much difference in the results attained by those who give much or little medicine, whether by the mouth or in other ways. I do not mean the use of medicine for intercurrent conditions but only such as are claimed to have a special effect on tuberculosis. He would be a bigot who, because a patient was in a sanatorium, would deny him such help as could be afforded by pharmacy for ailments properly so treated elsewhere. I need not discuss the many drugs that have been used. The legion of derivatives from creosote have almost succumbed to the absence of the German sample post. Creosote itself is still variously used. The so-called nascent iodine treatment seems to be not all that was hoped. I am told by those seeing it in use alongside control cases that there are no reliable contrasts. The presence of latent syphilis should be excluded before ascribing any improvement under this method to its effect on tubercle.

The true position is that drugs are accessories to the hygienic method and not the converse. The advocated remedies seem to have their entrances and their exits. Unless I am misguided, the hygienic method remains of the same value, whatever that may be, with or without them. It will be useful to learn from those taking part in the discussion how much importance they assign to pharmacy in achieving their results.

CONCLUSIONS AS TO THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT.

There are no doubt many questions which I have omitted in trying to point out the difficulty of assessing sanatorium treatment. I trust these will be recognised.

Meanwhile I will say that the value of the institutions clinically lies: (1) In the persons of their medical officers who can devote a relatively greater degree of special skill in management to their patients than they can usually get at home; (2) in their surrounding and equipment which offer a relative degree of greater hygienic protection; and (3) in their facilities for affording a better health education.

Their limitations arise from (1) certain deficiencies in medical education; (2) what may be called the lack of a

health conscience among the people; and (3) economical consideration.

THE SANATORIUM AND PREVENTION.

Coming to the position of the sanatorium in the preventive campaign I fear I shall be guilty of even more sweeping generalisations as a basis for discussion than those I have made in appealing for enlightenment as to its clinical value. By prevention I shall imply the diminution of the national loss due to tuberculosis,

It is a very large question. It raises the issue of whether we are on the right lines in dealing with this disease by the continual multiplication of institutions for treatment. At the outset I would like to refer again to the report of the Local Government Board.

The report contrasts the acute infectious diseases with tuberculosis, but I think insufficiently. In regard to fever isolation hospitals it says:—

"Although these institutions may not have completely fulfilled expectations in the amount of reduction of infection secured, they have done great work in this direction and have made themselves indispensable under modern social and industrial conditions. In the acute infective diseases the onset of secondary cases occurs after a few days' incubation; in pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect. ..... The bearing of these facts on the institutional treatment of consumption is obvious. ..... They cannot be institutionally treated continuously, even if they were willing, and there is no need for residential institutional treatment during the large part of their sick life, assuming that they follow out the simple instructions in which they have been previously educated, preferably in a residential institution. ..... The short term of stay in a sanatoria or hospital for tuberculosis is stated to render home supervision more efficient. ..... A large proportion of the infective lifetime of every consumptive and the whole of the lifetime of some consumptives will necessarily be spent at home, if possible with skilled supervision and domiciliary treatment. An essential part in the prevention of the spread of tuberculosis consists in housing patients under conditions in which they will not spread infection. Measures for securing that the consumptive shall not be a source of massive infection must be reconciled with this economic consideration."

Certain comments seem to follow on these sentences gathered from a report which I confess I have found difficult to follow in its deductions. For acute fevers I think we are prepared to agree that institutions *have* made themselves indispensable under *modern social and industrial conditions.* Are they indispensable in a disease with a latent period stretching over years? How is skilled supervision and domiciliary treatment to be secured under present circumstances and the prevailing conditions? From the very nature of things the tuberculosis officer and nurse can only deal with a fringe of the cases. The private medical attendant is largely untaught by those responsible for his professional equipment, and yet must deal with the great mass of domiciliary cases. There are certain reforms indicated here which if carried out would diminish the need for these costly institutions, admittedly inadequate to secure segregation, full treatment, and arrest of this chronic disease. I quoted earlier the statement in the report that treatment and prevention are largely identical. But the report itself states that "difficulties arise when the tuberculosis officer concerns himself with treatment while giving little attention to hygienic circumstances." I have said elsewhere that the tuberculosis officer would often be better employed in visiting, helping, and encouraging the medical practitioners in his district, than in visiting patients, examining contacts, and giving doles of medicine and what not at the dispensary. I am glad that a belated acknowledgment, so far as it goes, of the essential difference between treatment and prevention was thus recognised in the report. The tuberculosis dispensary sometimes reproduces the old chest hospital out-patient room too closely, the condemnation of which was one of the reasons for its multiplication. Sir Robert Philip in a recent letter to THE LANCET (Oct. 27th) once more called attention to the original purposes of the tuberculosis dispensary. I think he had reason.

In addition to the references already quoted from the report in regard to modern social and industrial conditions it is claimed that during the last 20 years—

"There has been increasing treatment and segregation of patients in Poor-law infirmaries and other institutions, who would otherwise have been under unsatisfactory domiciliary conditions, and that this segregation is largely responsible for the decline in the death-rate during the same period, notwithstanding increasing urbanisation and its associated relatively high mortality from tuberculosis."

Later, attention is drawn to the housing conditions of the people as revealed at the last Census of England and Wales, when 12·3 per cent. of the population lived in three-roomed dwellings.

Infection and Environment.

I suppose the implication is that institutional treatment, with all its drawbacks and with its increasing control of clinical work under Local Government Board conditions, is easier to develop than improvement in social and industrial conditions. One may be grateful for the facts without accepting the inferences in the report.

Surely pathology and morbid anatomy have proved to the satisfaction of students of tuberculosis that the bacillus is a comparatively harmless pest to the great majority of us. Urbanisation has been shown to be associated with an increased relative mortality, and therefore inferentially increased morbidity, but it has also been shown to be associated with the fall of the death-rate in urbanised countries. Mankind is reacting to the dissemination of tubercle. Dr. Mott once said that civilisation is syphilisation. It is certain that urbanisation is tuberculisation. The gradual fall of the total death-rate is, I think, due to the creation of a race resistant to tuberculosis by the ruthless methods of Nature. Perhaps these methods have involved prophylactic infection.

If you were to assist Nature there is, perhaps, more to be said for prophylactic inoculation than for increased institutionalism in this disease. Tuberculosis is not only a latent condition in individuals, but a latent disease in communities. Morbidity and mortality have surely been proved to be independent of the mere fact of the occurrence of tubercle infection. A great mass of the loss from the disease as shown by morbidity and mortality has as surely been proved *ad nauseam* to be due to social factors.

In the majority of cases sanatorium treatment suffers in the public estimation because the resistance which may have been regained is more or less rapidly lost on a return to the old surroundings. We may plead for better domiciliary treatment and for a larger number of skilled supervisors, but our hands are tied by the lack of local and central concentration on environment in the fullest sense of the word.

Private practitioners tell you that their hands are also tied, and sanatorium medical officers are always regretting the difficulties of many of their patients on leaving the institution. The general practitioner knows what all students of the morbidity and mortality of tuberculosis also know. The Local Government Board has supplied us with invaluable material. We have only to study the many district maps that have been made of the incidence of mortality, or to analyse the occupational figures supplied in the decennial reports of the Registrar-General, to be convinced of these facts. Clinical experience affords a few exceptions to the general rule. These may be due to various causes in individual instances. But I have no doubt that if the truth were known they could, so far as infection is concerned, be traced to the constant supply that comes from herded but motile consumptives.

How can treatment at any number of institutions prevent national loss from a disease the occurrence of which, *as a disease*, is due in the main to factors other than infection. I have the gravest doubts of the value of trying to control a leak by swabs, or of winning a campaign by any system of hospitals and ambulances.

Dependence of Tuberculosis Problem on Social Factors.

The value and limitations of the sanatorium in regard to prevention lie in a much bigger consideration than the multiplication of their number on a false analogy with the acute infections, however qualified.

The real value of the sanatorium lies in the fact that it has demonstrated how resistance is regained. Inferentially it demonstrates, therefore, how it was previously lost. There has been a lack of recognition of its real significance. It presents the contrast to all those conditions which bring about loss of resistance. The sanatorium furnished its object-lesson long before the tuberculosis dispensary was originated. The lesson was not grasped. The tuberculosis dispensary should have been created and developed in every

district as an efficient bureau of information: it has become too much of a clinical centre. It is a peculiarity of vicious circles that they necessarily tend to enlarge. There seems to be no end to the vicious circle that has been grafted on to the tuberculosis dispensary. It has become the centre of a whole series of ever-extending clinical efforts. As Sir Robert Philip truly says, these, the sanatorium, the hospital, the tuberculosis school, the farm colony, the care committee, &c., are well known. There are not nearly enough of them yet if we are to continue to be obsessed with the need of fighting infection and to forget the relative harmlessness of this acid-fast bacillus in comparison with the other factors in the disease, against which this clinical work is not only a merely palliative measure but a very powerful demonstration.

The present increase in the mortality of tuberculosis I believe to be temporary and to afford no evidence in particular of the value or worthlessness of the present administrative measures, including increased sanatorium beds and manifold dispensaries. But it emphasises the dependence of the tuberculosis problem on social factors. It is these that require investigation and appropriate measures. No amount of institutions will affect them. I think the present increase in mortality will be followed eventually by a more rapid fall in the death-rate. I do not think this improvement will be apparent at once, nor do I think that it will be long delayed. I am sure it will be ascribed in reports to whatever administrative measures are undertaken. If it occurred after a campaign, however begun so long as it was consistent, against the conditions which we know definitely to be associated with high local or occupational death-rates, I should myself claim the improvement to be due to the object-lesson afforded by the sanatorium.

There is a long way to go yet, but the sanatorium will have achieved its full value, and that will be unlimited, when everyone lives and works under sanatorium conditions and every practitioner of medicine is a sanatorium doctor.

TARTAR EMETIC IN TREATMENT OF MALARIA.

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IN view of a paper by Sir Leonard Rogers[1] the following eight cases were treated intravenously with tartar emetic. They were treated during February, 1917, and include infections both with benign and malignant tertian parasites. All had a previous history of attacks of malaria. During this period, though relapsing malaria was frequent, it was clinically of a mild type and responded well to treatment with quinine by mouth. The cases chosen for treatment with tartar emetic were selected in so far that only those showing a fair number of parasites were taken. In all some 12 cases were selected for treatment, and the results of eight of these are published in detail.

The tartar emetic was used in 2 per cent. solution, with which ½ per cent. carbolic acid was added to preserve its sterility.

CASE 1.—Private G., aged 21, 15 months' service in Salonica. Reported sick 17/2/17, complaining of pains in left side, shivering attacks, and dizziness. There was a history of a previous attack of malaria in July, 1916, and several minor attacks since. On admission his general condition was fair, his temperature normal, his pulse 60, and his spleen was not palpable. A blood film showed subtertian crescents. Treatment by tartar emetic was started on the day following his admission.

After the second febrile attack the patient was placed on treatment with quinine by mouth.

Day.	Blood examination.	Treatment.	Condition.
11	Seven crescents seen.	2 c.c. 2% T. emetic.	—
12	One crescent seen.	—	No pyrexia.
13	,,	2 c.c. 2% T. emetic.	,,
14	Seven crescents seen.	—	,,
15	A few crescents seen.	—	,,
16	B.F. negative.	—	,,
17	,,	3 c.c. 2% T. emetic.	,,
18	A few crescents seen.	—	,,
19	B.F. negative.	4 c.c. 2% T. emetic.	,,
20	,,	—	,,
21	,,	—	,,
22	A few crescents seen.	—	,,
23	B.F. negative.	—	,,
24	,,	—	,,
25	—	—	,,
26	Numerous B.T. parasites seen.	—	T. 102·4° F.
27	B.F. negative.	—	No pyrexia.
28	Very numerous B.T. parasites seen.	—	T. 99·8° F.

CASE 2.—Corporal S., aged 32, admitted to hospital on Feb. 15th, 1917. Reported sick on 3/2/17, complaining of attacks of shivering, vomiting, and pains all over. There was a history of a previous attack in July, 1916, and 10 or more slight attacks since that date, the attacks recently becoming more frequent. On admission his general condition was good, his temperature normal, pulse 90, spleen hard, tender, and palpable, one finger's breadth below the costal margin. His blood showed subtertian crescents and small ring forms.

In spite of the disappearance of the parasite from the peripheral blood stream, yet there were moderately sharp relapses, after which quinine treatment was started.

Day.	Blood examination.	Treatment.	Condition.
12	—	—	No pyrexia.
13	—	—	,,
14	Scanty ring parasites.	Quin. sulph. gr. 40.	,,
15	Subtertian crescents +; rings +.	,,	T. 100·4° F.
16	—	,,	T. 101° F.
17	—	1 c.c. 2% T. emetic.	No pyrexia.
18	One small ring parasite.	—	,,
19	B.F. negative.	2 c.c. 2% T. emetic.	,,
20	,,	—	,,
21	One crescent found.	3 c.c. 2% T. emetic.	,,
22	,,	—	,,
23	B.F. negative.	—	,,
24	Two crescents found.	—	,,
25	—	4 c.c. 2% T. emetic.	,,
26	B.F. negative.	—	,,
27	,,	—	,,
28	One small ring parasite.	—	,,
29	B.F. negative.	—	,,
30	,,	—	,,
31	,,	—	T. 103° F.
32	,,	—	T. 102·8° F.
33	,,	—	T. 101° F.
34	,,	—	No pyrexia.
35	,,	—	,,

CASE 3.—Lance-Corporal B., aged 21, 14 months in Salonica. Admitted on 18/2/17, having reported sick a week previously, complaining of shivering, headache, and temperature rising to 103° F. There was a history of a previous attack of malaria in June, 1916. On admission his general condition was fair, tongue clean, temperature normal, pulse 80, and spleen not palpable. His temperature remained normal for a week after admission and then rose to 104°. A heavy infection with B.T. parasites was present in blood.

Day.	Blood examination.	Treatment.	Condition.
8	—	—	No pyrexia.
9	—	—	,,
10	—	—	,,
11	—	—	,,
12	—	—	,,
13	—	—	,,
14	—	—	,,
15	—	—	T. 9 P.M. 104°F.
16	B.T. ++	1 c.c. 2% T. emetic.	T. 100° F.
17	B.T. + (with gametocytes).	—	T. 106° F., 105·2° F.
18	B.T. +	3 c.c. 2% T. emetic.	No pyrexia.
19	B.T. gametocytes +	4 c.c. 2% T. emetic.	,,
20	B.T. + (scanty gametocytes)	—	,,
21	B.T. + (scanty).	—	,,
22	B.F. negative.	—	,,
23	,,	—	,,
24	,,	—	,,
25	B.T. + (very scanty).	—	,,
26	B.T. + (scanty).	Quin. sulph. gr. 20 t.d.s.	T. 104·6° F.
27	,,	—	No pyrexia.
28	B.T. +++	—	T. 104·2° F. T. 103·4° F.
29	B.T. + (scanty).	—	No pyrexia.
30	,,	—	,,

In spite of tartar emetic the parasites persisted in the circulation, and a week after the last injection of 8 centigrammes of tartar emetic the patient had a typical attack of malaria with temperature rising to 104·6° F. He was placed on sulphate of quinine 20 grs. three times a day by the mouth with progressive improvement.

CASE 4.—Corporal C., aged 41, 15 months in Salonica area. The case was admitted to hospital on 17/2/17 for observation on recommendation of medical board. There was a history of a previous attack of malaria

[1] Brit. Med. Jour., Jan. 6th, 1916.

in August, 1916, which had caused him to be invalided to Malta. He returned from Malta in October to this command, and in January, 1917, was again admitted to hospital. He did a week's duty and was admitted again to hospital. On admission his general condition was poor, he was anæmic and cachectic looking, the temperature was normal, the spleen not enlarged. The day following his admission he had a typical attack of malaria, with temperature rising to 103° F., and benign tertian parasites present in the blood.

Day.	Blood examination.	Treatment.	Condition.
1	—	—	No pyrexia.
2	—	—	T. 103° F.
3	—	—	No pyrexia.
4	B.T. +	1 c.c. 2% T. emetic.	T. 101° F.
5	B.T. + (scanty).	—	No pyrexia.
6	B.F. negative.	2 c.c. 2% T. emetic.	,,
7	,,	—	,,
8	,,	—	,,
9	,,	—	,,
10	,,	—	,,
11	,,	—	,,
12	,,	—	,,
13	One B.T. parasite.	—	,,
14	—	4 c.c. 2% T. emetic.	,,
15	B.F. negative.	—	,,
16	,,	—	,,
17	,,	—	,,
18	B.F. + (scanty).	Quin. sulph., gr. 20, t.d.s.	T. 103° F.
19	B.T. negative.	—	No pyrexia.
20	,,	—	,,
21	,,	—	,,
22	,,	—	,,
23	,,	—	,,
24	,,	—	,,

Five days after the last injection of 4 c.c. of tartar emetic his temperature again rose to 103° F., and benign tertian parasites reappeared in the blood stream. He was placed on 20 grs. of quinine sulphate three times a day by mouth. The temperature remained normal, the parasites disappeared, and on the 14/3/17 he was discharged to hospital ship.

CASE 5.—Driver W., aged 21. Twelve months' service in Salonica area. He reported sick on 11/2/17, complaining of shivering attacks and pains all over. There was history of previous attacks of malaria since May, 1916. On admission he looked anæmic and ill, temperature normal, pulse 104, and spleen palpable one finger's breadth below the costal margin, but not tender. He complained of pain in the toes when the feet were warm. On the dorsal surface of all the toes on both feet were small irregular areas dark in colour, and all partially anæsthetic. Similar changes in the feet had been observed previously in three cases suffering from severe malaria, and have already been reported elsewhere.

Day.	Blood examination.	Treatment.	Condition.
12	—	—	No pyrexia.
13	B.T. +	—	T. 101° F.
14	B.F. negative.	1 c.c. 2% T. emetic.	No pyrexia.
15	,,	—	,,
16	,,	2 c.c. 2% T. emetic.	,,
17	,,	—	,,
18	,,	—	,,
19	,,	—	,,
20	,,	—	,,
21	,,	—	,,
22	,,	—	,,
23	,,	—	,,
24	,,	—	,,
25	,,	—	,,
26	,,	—	,,
27	,,	—	,,
28	,,	—	,,
29	B.T. + (scanty).	—	T. 102·4° F.
30	B.F. negative.	—	T. 102·4° F.
31	—	3 c.c. 2% T. emetic.	T. 103° F.
32	B.T. +	—	No pyrexia.
33	,,	—	,,
34	B.F. negative.	—	,,
35	B.T. + (scanty).	—	,,
36	—	Quin. sulph. gr. 20 t.d.s.	T. 104° F.
37	B.F. negative.	—	No pyrexia.
38	,,	—	,,
39	B.T. + (scanty).	—	,,

In this case the tartar emetic had no effect in causing the disappearance of the parasite or in preventing clinical relapses. The condition of the feet gradually cleared up. He was placed on quinine sulphate by mouth, and ultimately was discharged to hospital ship.

CASE 6.—Sapper B., aged 26, 15 months' service in Salonica area. Reported sick on 10/2/17, complaining of shivering attacks and headaches. Admitted to base hospital on 15/2/17. There was a history of one previous attack of malaria in August, 1916. On admission his general condition was fair, temperature normal, pulse 76, spleen not palpable. On the day after his admission he had a typical attack of malaria, with temperature of 101·4° F., and blood film showed a heavy infection with benign tertian parasites.

For some days after the last injection of 4 c.c. tartar emetic the blood film became negative, but again became positive after three sharp rises of temperature. In spite of the tartar emetic this case showed a mild degree of almost continuous pyrexia interrupted by sudden elevations of temperature, which did not yield until quinine was administered. The spleen also, which was not palpable on admission, became definitely tender and palpable during the period when tartar emetic was being administered. He was ultimately put on quinine by mouth and discharged to hospital ship.

Day.	Blood examination.	Treatment.	Condition.
3	—	—	T. 104·6° F.
4	—	—	T. 101·6° F.
5	—	—	No pyrexia.
6	—	—	,,
7	B.F. negative.	—	T. 101·4° F.
8	—	—	No pyrexia.
9	B.T. + +	—	T. 105·2° F.
10	B.F. negative.	—	T. 103·2° F.
11	,,	1 c.c. 2% T. emetic.	No pyrexia.
12	One B.T. gametocyte.	—	,,
13	—	2 c.c. 2% T. emetic.	,,
14	B.F. negative.	—	,,
15	,,	—	,,
16	,,	—	T. 100·4° F.
17	,,	—	No pyrexia.
18	,,	3 c.c. 2% T. emetic.	,,
19	,,	—	,,
20	,,	—	T. 99·8° F.
21	,,	—	T. 99·8° F.
22	,,	4 c.c. 2% T. emetic	T. 101° F.
23	,,	—	T. 100° F.
24	,,	—	No pyrexia.
25	,,	—	,,
26	,,	—	T. 103° F.
27	,,	—	T. 100·4° F.
28	B.T. present + +	—	T. 101·8° F.
29	B.T. present.	—	T. 100·6° F.
30	B.T. present (scanty).	—	T. 103·6° F.
31	,, ,,	—	No pyrexia.
32	B.T. present (very scanty).	—	,,
33	B.F. negative.	—	,,

CASE 7.—Private H., aged 24, 15 months' service in the Salonica area. Reported sick on 11/2/17, complaining of attacks of shivering, sweating, headache, cough, and fever. He was admitted to base hospital on 18/2/17. In July, 1916, patient had his first attack, and was sent to Malta for three weeks. On admission to hospital his general condition was fair, but he looked anæmic, pulse 80, temperature 99° F., and spleen definitely enlarged, hard and tender. Benign tertian parasites were found in the blood films. In spite of five injections of tartar emetic, 28 centigrammes in all, the parasite persisted in the film, and the patient had repeated bouts of fever. Ultimately he was placed on 20 grs. of quinine sulphate three times a day by mouth, with the result that the temperature became normal, his blood film negative, and remained so during the rest of his stay in hospital.

Day.	Blood examination.	Treatment.	Condition.
8	—	—	T. 102° F.
9	B.T. +	—	No pyrexia.
10	B.F. negative.	0·02 gm. T. emetic.	T. 104° F.
11	B.T. + (scanty).	—	No pyrexia.
12	,,	0·04 gm. T. emetic.	,,
13	One B.T. gametocyte present.	—	,,
14	,,	—	,,
15	B.F. negative.	0·08 gm. T. emetic.	,,
16	B.T. + (scanty).	—	,,
17	B.F. negative.	0·08 gm. T. emetic	,,
18	,,	—	,,
19	B.T. rings + (scanty).	—	,,
20	B.T. + (scanty) with gametocytes.	0·06 gr. T. emetic.	T. 103·4° F.
21	B.T. + (fair numbers).	—	No pyrexia.
22	B.T. + (very scanty).	—	,,
23	,,	—	T. 104° F.
24	,,	—	No pyrexia.
25	B.T. + (scanty).	Quin. sulph. gr. 20	T. 104·6° F.
26	B.F. negative.	—	No pyrexia.
27	,,	—	,,
28	,,	—	,,
30	,,	—	,,
31	,,	—	,,

CASE 8.—Private R., aged 21, reported sick on 15/2/17, complaining of weakness and attacks of shivering. Admitted to base hospital on 17/2/17. The primary attack of malaria had occurred in October, 1916, and from that time the patient had had attacks almost every week. On admission his general condition was poor, anæmic, temperature 105·6° F., pulse 114, his spleen hard and extending three fingers' breadth below the costal margin. His blood showed subtertian crescents and rings.

Day.	Blood examination.	Treatment.	Condition.
1	Subtertian crescents and rings.	—	T. 105° F.
2	—	Quin., 20 grs. t.d.s.	T. 99·4° F.
4	—	1 c.c. 2% T. emetic.	T. 98° F.
5	Benign tertians only.	—	No pyrexia.
6	—	2 c.c. 2% T. emetic.	,,
7	Blood negative.	—	,,

From the time of the last injection of tartar emetic the blood film remained negative till the patient's discharge from hospital. He had, however, two attacks of pyrexia, the temperature on each occasion rising to 101° F. The spleen did not diminish in size and he was ultimately discharged to hospital ship.

Of these eight cases there were two mixed infections (Nos. 1 and 8), one subtertian malaria (No. 2), and five benign tertian malaria (Nos. 3, 4, 5, 6, 7), three of which showed gametocytes.

Of the two mixed infections, the crescents disappeared in both cases, the benign tertian parasites persisting in one and disappearing in the other.

In the subtertian crescent infections the crescents disappeared after three injections of tartar emetic. In spite of the disappearance of the crescents the patient had three typical clinical attacks of malaria, though the parasites could not be demonstrated again in the peripheral blood stream.

Of the five benign tertian infections, in none did the parasites disappear from the blood stream till large doses of quinine had been administered.

In the three cases where gametocytes were seen, in two the gametocytes were not found subsequent to the tartar emetic treatment, in the other case the gametocytes persisted.

Neither in the subtertian cases, nor in the benign tertian cases, was any marked clinical improvement noted, and certainly in the benign tertian cases the tartar emetic did not appear to exert any effect whatever on the parasites.

The results coincide with those of Low and Newham reported in the *British Medical Journal* of March 3rd, 1917, and the results of cases treated in other hospitals, and were so disappointing that we did not feel justified in continuing the observation.

THE MORTALITY FROM POST-CHOLERAIC URÆMIA:

A 70 PER CENT. REDUCTION THROUGH INTRAVENOUS INJECTIONS OF SODIUM BICARBONATE.

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I HAVE already recorded a great reduction in the mortality due to post-choleraic uræmia during 1915 through the routine intravenous injections of bicarbonate of soda in all severe cases of cholera,[1] based on the proof by Captain A. J. Shorten, I.M.S., and myself,[2] that an acidosis is an essential feature of severe cholera. As these favourable results have now been confirmed by a much larger series of cases during the last three cholera seasons in Calcutta, which can be compared with the data of three years before the use of the alkaline solutions in the same wards, it appears to be advisable to place them on record.

Statistical Evidence.

As early as 1893 Wall, in his book on cholera,[3] used a very small quantity of sodium bicarbonate (0·2 per cent.) in his weak saline solution (0·4 per cent. of sodium chloride) intravenously, and in 1910 Sellards[4] recorded having found that large quantities of alkalies might be given by the mouth in cholera patients without rendering the urine alkaline and suspected an acidosis. In 1914 he recorded[5] having obtained a great reduction in the deaths from post-choleraic uræmia by the addition of sodium bicarbonate to the saline solution used for intravenous injections. In 1915 Captain Shorten and I[2] recorded actual estimations of the alkalinity of the blood in 20 cholera patients, and showed that in fatal cases of post-choleraic uræmia it is usually reduced to the extremely low figure of N/100 or even less, when it is too late, as a rule, to save the patients even by alkaline transfusions. Later in 1915[6] I recorded alkalinity estimations in 62 cases, and early in 1916[1] gave the data of 104 cases treated during the previous year, which showed a reduction of the alkalinity to from N/45 to N/60 in no less than 76·9 per cent. of cholera cases, and to the extreme and dangerous degree of N/80 to N/100, or even less, in as many as 30·7 per cent. During 1915 the death-rate from post-choleraic uræmia was reduced to 2·7 per cent. from an average of 11·1 per cent. during the previous three years without alkalies—a remarkable improvement.

The following table gives the figures for the three years 1912–14 without alkalies, and for 1915–16 and the first half of 1917, which includes the cholera season in Calcutta, during which 70 per cent. of the yearly cholera cases occur:—

Total Cholera Mortality and the Deaths from Uræmia Before and After the Use of Alkalies.

Years.	Total cases.	Deaths.	Per cent.	Uræmia deaths.	Per cent.
Without Alkalies.					
1912	170	54	31·76	24	14·11
1913	200	49	24·5	17	8·5
1914	222	49	22·01	25	11·2
1912-14	592	152	25·6	66	11·1
With Alkalies.					
1915	226	39	17·22	6	2·64
1916	204	52	25·5	8	3·92
1917	154	24	15·6	5	3·2
1915-17	584	115	19·7	19	3·25

Reduction in the mortality from uræmia by alkalies 70·7 per cent.

The extensive data in the table so amply confirm my former results in a smaller series that they require very little comment. The reduction of the uræmia death-rate during the last two and a half years by 70 per cent. affords the most striking testimony to the importance of the proof that this serious complication of cholera is essentially an acidosis, which can moreover be largely prevented by the routine use of alkalies intravenously and by the rectum. It is worthy of note that more than half the few remaining cases of fatal uræmia in the last two and a half years occurred in patients admitted with suppression of urine of from one to three days' duration, too late to benefit fully by the alkaline treatment.

Method of Treatment and its Effects.

It may be well to state again my present routine regarding saline injections in cholera.

Two solutions are now used. The first is the hypertonic saline, which I have given with much success in well over one thousand cases during the last ten years. It consists of 120 grains of sodium chloride with 4 grains of calcium chloride to a pint of sterile water. For several years now I have omitted the potassium chloride of Ringer's fluid, as some physiologists regard this as an unnecessary and possibly depressant addition, and the increasingly favourable results obtained in recent years show that it is certainly not required. The second, or alkaline solution, contains 60 grains of sodium chloride and 160 grains (2 per cent.) of sodium bicarbonate, and is thus also a hypertonic fluid. To avoid decomposition of the bicarbonate on boiling, the chloride solution is sterilised before the bicarbonate is added, and the latter sterilised in packets in an autoclave and subsequently added.

In patients admitted early without prolonged suppression of urine the hypertonic sodium chloride solution only is used at the first transfusion, the quantity being regulated by the specific gravity of the blood as described in my book on cholera. If the case is sufficiently severe to require further intravenous injections, at each subsequent transfusion one pint of the alkaline solution is first given and followed by the hypertonic chloride solution in the quantity indicated by the specific gravity of the blood. In cases admitted late with suppression of urine for 12 hours or more the alkaline solution is given at the first injection as well. Moreover, it is used in all cholera cases with deficient urinary secretion without much concentration of the blood as shown by the specific gravity, in which the normal saline was formerly advised by me. As long as the specific gravity of the blood is not much below the normal, such as not less than 1050, a pint of the alkaline solution can always be safely given intravenously for deficient secretion of urine. In addition, this solution is now used in the place of normal saline by the bowel when formerly advised.

In a former paper[1] I gave details of several cases in which from 800 to 1120 grains of sodium bicarbonate had been injected intravenously in threatening uræmia in cholera, with recovery. The following remarkable case is also worthy of record.

Post-choleraic suppression of urine for six days, with re-establishment of the secretion after 1600 grains of sodium bicarbonate had been injected intravenously.—A man, aged 53, admitted for cholera of 29½ hours' duration, with suppression of urine

for 24 hours. Sp. gr. of blood 1055, blood pressure 50 mm. He was given 1 pint of the alkaline solution and 3½ pints of hypertonic chloride solution on admission, and in the course of six days received a total of 14¼ pints, of which 10 pints were the alkaline solution, containing in all 1600 grains of sodium bicarbonate, in eight intravenous injections. During one day before admission and five complete days in hospital he passed no urine, but on the sixth day in hospital 9 ounces were measured, followed by 20 ounces the next day, and then freely for three more days, during which the uræmic symptoms entirely disappeared. Unfortunately, he developed a septic arm after a hypodermic injection of pituitrin, the temperature rose to 102° F., and he succumbed to fever and exhaustion five days after the urinary flow had been re-established, his age being much against him.

I have been through my tabulated records of nearly 600 cases treated without alkalies from 1912–14, and find that no case of recovery occurred in which the urine had been completely suppressed for more than two days, while very few even of the fatal cases survived more than three days without passing urine. On the other hand, during the last two and a half years, under the alkaline treatment, it has been by no means rare for patients to be saved after complete suppression of urine for three days and over, but the above case of free secretion of urine after six days' complete absence is a record in my long experience of post-choleraic uræmia, which I have previously pointed out,[1] runs a much more rapid course than surgical forms of anuria without acidosis. It is of interest to note that shortly before the urine reappeared the alkalinity was found to have been raised to the high point of N/28 5.

Lastly, I may point out that the considerable further reduction in the mortality of cholera in my wards during the last two and a half years is mainly due to the decrease of deaths from uræmia as a result of the alkaline treatment as shown in the table. In 1916 an exceptionally large number of deaths occurred from collapse (namely, 19 per cent. against an average for the last 5½ years of 11 per cent.). This was mainly due to an unusually large number of admissions in a moribund state, the patients dying before transfusion could be completed, and of very old and feeble subjects. Nevertheless, the mortality during the last two and a half years among 584 cases has fallen to 19·7 per cent., or one-third of the rate in the same hospital before I commenced the hypertonic saline treatment, while during the first six months of the present year (in which the mortality is almost invariably higher than in the second half) the death-rate among 154 cases has been only 15·6 per cent., or one-fourth of the old mortality, a highly gratifying reduction of about 75 per cent. in the death-rate of this terrible disease.

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Calcutta.

EPITHELIOMATOUS NEOPLASMS OF THE DORSAL ASPECT OF THE HAND.

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THE origin of epitheliomata, like that of all malignant growths, is obscure, but these neoplasms, developing on the dorsal aspect of the hand, are usually preceded or accompanied by some local irritative process. These processes are trauma, the various dermatoses, osseous fistulæ, angiomata, papillomata, and cicatrices.

The Part Played by Local Irritative Processes.

Traumatism *per se* appears to favour epithelial neoformation, and in the case of the hand contused wounds are, in the patient's history and opinion, the origin of the lesion. The origin of the so-called professional epitheliomata, so common on the dorsal aspect of the hand, may be explained in this way, since burns of an accidental nature or from acids and caustics employed in certain professional occupations are frequent.

The dermatoses are often the starting point of epithelial lesions, particularly chronic eczema, psoriasis, and, above all, lupus. Ulcers have been recorded as the causative factor of these growths, and I believe that this is particularly true in the case of cutaneous cancroids.

Diseases of the bones of the hand may give rise to epithelioma of the skin on account of the continued irritation to which they give rise, but fistula developing in a bone is particularly prone ultimately to set up an epitheliomatous process, and a fair number of instances are known of pavement-cell epithelioma occurring in fistulous tracts of long standing.

Angiomata are well known for their tendency to cancerous change, although this is denied by some. Perhaps papillomata are the most constant process in the etiology of epitheliomatous growths on the dorsal aspect of the hand. At the start these epithelial productions are generally benign, but from repeated trauma or ill-advised treatment with caustics and the like, they assume malignant characters. All of these processes, no matter what may be their origin, may undergo such malignant transformation, and as they are frequently seated on the dorsal aspect of the hand their etiological importance is clear.

There are, however, epitheliomata whose origin is quite different which develop in tissues apparently healthy. Unquestionably all the causes that have been mentioned play a part in the origin of the malignant process, but this part is secondary only, and in all probability they merely awaken or accelerate the activity of certain pathologic productions which likewise develop from some inflammatory influence that is as yet an unknown quantity. These local causes in the development of epithelioma are neither absolute nor necessary, since this malignant growth can and does develop without them.

Nature and Development of the Neoplasm.

Epithelioma of the dorsal aspect of the hand appears to be a lesion of advanced years, the greater number of patients being from 60 to 70 years of age; but when the malignant tumour arises in a nævus this occurs more frequently between the ages of 30 and 40 years. This malignant process is said to be more common in the male, and undoubtedly this is true for the lips, cheeks, &c., but both cases to be here reported occurred in women. It has also been shown by Heurteaux that of all the cutaneous epitheliomata of the upper limb the dorsal aspect of the hand is the seat of the process in somewhat over 50 per cent. of the cases.

Epithelioma of the back of the hand commences usually by hypertrophy of a papilla, a tumefaction of the derma, or may be seated in a sudoriparous gland, and, according to the type, there will result a papillary or glandular dermic form, but it seems more than probable that the former is more frequent in the anatomical region considered in this paper.

The growth commences by a small verrucous production of hard consistency, its base being composed of a cluster of hypertrophied cutaneous papillæ. Then the verruca increases in size and at the same time becomes more vascular. It is apt to give rise to intense pruritus and excoriates and cracks. These crevices, by multiplication, at length result in an ulcerous process, giving rise to a serous secretion in which epithelial cells and pus cells are found. The epithelium next pushes its way between the papillæ and involves the dermis, which becomes the seat of a very marked cell proliferation. In the deeper structures the connective tissue becomes mixed with the epithelial cells and represents the area of invasion and of infiltration of the neighbouring structures.

As soon as the healthy tissue becomes involved and the epithelial productions penetrate the surrounding structures an inflammatory process of the integuments will be observed. The zone of invasion alone separates the neoplastic production from the healthy tissues, and from this time on the epithelial ulceration progresses in depth and extent.

In other cases the neoplasia forms masses which mingle with the connective tissue which it invades; its growth is dependent upon the surrounding structures; the muscles are invaded, their fasciculi being separated by epithelial growth. A number of epidermic globes are also present.

A process such as this is that of a neoplasm which is dry and whitish in hue and gives no juice when it is scraped; in other words, it is the lobulated pavement-cell epithelioma. Finally, the growth may be composed of long tubuli, resulting from the development in the gland tubules. This type is less common, and represents the tubulated pavement-cell epithelioma. The third and last type of the process

ıcountered on the back of the hand is the pearly pavement-
ıll epithelioma. It is the most uncommon of them, and
presents those growths which clinically remain stationary
r a considerable lapse of time. Horny, concentric cells
e only found, their power of invasion is slight, and if no
ritative process comes in play they remain quiescent.

Microscopical examination of the raised edge of one of
ese growths shows a tissue having the general appearance
a gland—that is to say, an irregular divisi n into large
bes, these divided in turn into lobules. The skin sur-
ınding the tumour shows no morbid change in the dermis
horny layer of the epidermis. The Malpighian bodies
er a marked extension, while the interpapillary depres-
ns are strongly evident. They dip down into the papil-
y tissue of the dermis, some of them becoming bifurcate
d club-shaped, in every way similar to glandular culs-de-
undergoing development.

From examination of numerous sections it would seem
ıt neither the sebaceous nor sudoriparous glands nor the
r follicles are the starting point of these epithelial forma-
ns, so that it seems clear that they are derived solely
m the prolongations of the Malpighian layer which exist
mally between the papillary projections of the dermis.
ar the growth, some of these prolongations are enlarged
their deep extremity which only reaches the middle
tion of the dermis, while others dip down into the midst
the dermis, reaching its connective tissue by extending
ond the papillary layer. They are also club-shaped and
composed of a pedicle attaching them to the Malpighian
y and by a deep-seated intradermic portion which is
kedly spherical at its extremity.

ıs to the tumour itself it offers the following structure.
lobules of the neoformed tissue are arranged in clusters
in chaplets, while in the centre of the large lobules
lermic lobules are seen formed in concentric layers,
the structure of an onion. Between these lobules the
nective tissue forms a network in the form of ramifica-
s, rich in vascular supply that accompanies the young
elements.

herefore, it may be logically assumed that anatomically
origin of the epithelial growth is entirely limited to the
rpapillary portions of the Malpighian body. The hair
cles and the sebaceous and sudoriparous glands take no
in the structure of the growth, and when they do exist in
preparation they are simply somewhat deformed from
sure of the growth. The retrogression of the neoplastic
ıents is due to an inflammatory process in the dermis
ı which the development of connective tissue results, and
connective tissue strangles the lobules of the tumour,
bringing about resorption.

Illustrative Cases.

SE 1.—Female, Irish nationality, 72 years of age and by occupa-
a charwoman. Widow for 15 years, two living children in good
h. She herself has always been well and robust. Examination of
ıcic and abdominal viscera negative.

out six years ago patient first noticed a small lump the size of a
ituated about the centre of the dorsal surface of the left hand.
s was some pruritus (probably due to an eczematous condition of
ikin) which caused her to scratch the part frequently. After a
the small lump took on the aspect of a wart which bled very
but was not painful, and this continued to develop slowly until
ondition to be described was reached.

e lesion on the back of the hand was almost exactly the size of a
ollar piece. It was almost perfectly circular. The edges were
and everted and raised to the extent of about 1·5 cm. The central
ated surface was covered with a dark-red granulation tissue
ı bled readily. There was a rather profuse, stinking, sanious
arge. The epitrochlear lymph node was very much enlarged and
Now lymphatics could be felt in the axilla, which could easily
t, because the patient was very thin. There was no evidence of
achexia, but pain was so intense that it kept the patient from
ng.

ular amputation at the lower third of the arm was done, the
ıt making a rapid and uneventful recovery. Her niece informed
riter that the patient lived comfortably for about four years and
from some pulmonary affection. I assume, however, from the
ıld by the niece, that death was presumably due to pulmonary or
ıl metastases.[1]

E 2.—Female, 64 years of age, a Belgian housewife, seen in con-
ion with Dr. Lenoir. Hereditary and personal antecedents *nil*.
and lungs normal excepting a slight chronic bronchitis and
sema of the apices. Abdominal viscera negative.

al condition.—An exuberant growth on the dorsal aspect of the
hand seated in almost the centre. This process began by a small
e of dark-red colour about seven months before I saw the patient.
reason apparently the tumour slowly increased in size until it
reached the dimensions of a 50-cent piece. The central portion, which covered the indurated base of the ulcer, had a fungous look, reddish-yellow in colour, and bled easily. At first sight the ulcer might almost be suspected of being tuberculous in nature. The contours of the base were almost perfectly circular, the edges were somewhat raised and red and surrounded by a dark violet ring. There was no difficulty in the movements of the fingers, and only a little sharp pain from time to time in the ulcer.

The axillary and epitrochlear lymph nodes were enlarged and hard and rolled under the finger. That in the epitrochlear region was the size of an almond. No evidence of cachexia.

Circular amputation of the arm at lower third, cleaning out of axilla as in operation for cancer of the breast. Recovery uneventful. At the time of writing, May 12th, 1917, the patient is still in excellent health 17 months after the operation. Histological examination showed that the growth was a tubular pavement-cell epithelioma. The lymph nodes of the axilla and epitrochlear region offered the same type of morbid change.

Clinical Phases: The Pre-ulcerative Stage.

For practical purposes epitheliomata of the dorsal aspect of the hand can be considered in two clinical phases—namely, the pre-ulcerative stage and the stage of ulceration, although it must be understood that this division is schematical. Some of these growths remain as simple sub-epithelial tumours for years, while others, on the contrary, develop very rapidly. The two cases reported serve as excellent types of the two extremes.

The physical signs of the pre-ulcerative stage are those of a small tumour seated on the dorsal aspect of the hand, frequently over the metacarpal joints or in the ungual fold. The growth is more like an induration of the integuments than a tumour in the true sense of the word, the limits being difficult to define at the commencement of the morbid process. The induration may be flat or offer a projecting surface, and presents the important characteristic that it is intimately incorporated in the skin. If an endeavour is made to mobilise the integuments covering it, it at once becomes evident that the process is united with the deep layers of the epidermis.

Delbet maintains that one of the physical signs is the impossibility to outline distinctly the limits of the growth, the examiner being unable to detect where it commences or ends.

During the pre-ulcerative stage the skin is not perfectly normal, and has a dried, parchment, or orange-skin look, the indication of adhesion of the Malpighian elements.

The neoplasm often begins by a kind of cluster of hypertrophied papillæ resting on a common base and contained in an epidermic sheath. The process is composed by big granulations the size of a millet-seed; in colour it is greyish or rosy, and in its neighbourhood lines of a bright tint are seen, caused by dilated capillaries. At other times the process commences in the form of a rosy or greyish tubercle of very small dimensions projecting above the surrounding cutaneous surface, sessile, with an uneven, lobulated surface.

Less frequently, when the growth starts in a sudoriparous gland, the lesion presents from the start a surface limited by an undulated, sinuous, greyish-coloured rim of tissue.

The functional symptoms of the pre-ulcerative stage are not of much account. There is some pruritus if an old cicatrix or a wart is present, and scratching will hasten the development of ulceration. Pain is absent and functional disturbances likewise, unless the growth is seated over one of the finger-joints, but by far the most important of the signs is the involvement of the lymphatic system. It is a mistaken idea to suppose that this does not take place until after ulceration has occurred, because in the rapidly developing types of this morbid process the enlargement of the lymph nodes occurs early, and is for this reason an important element in the diagnosis.

The Ulcerative Stage.

The ulcerative stage must fatally arrive, and is merely a question of time. It occurs earlier in some growths than in others, particularly in the fissured and cauliflower types. The former type is common, and offers itself in the form of a crevice with clean-cut edges, without any tendency towards cicatrisation. Spreading of the borders is quite limited, but induration is marked. The edges often puff up, their external aspect becomes shiny, and the skin covering them becomes thin.

The edges shade off into the surrounding structures, while the induration cannot be limited by palpation. Small neoplastic nodules, disseminated over the edges, may be seen in the form of little grain-like bodies. The secretion usually small in amount, being a blood-stained, cloudy flui

[1] *Note.*—A very excellent water-colour taken before operation of this ism is in the possession of the Boston Medical Library, Boston, among a small collection of drawings presented to it by the some years ago.

This fissure type of the process is slow in evolution, but may be quite painful.

Quite different is the so-called cauliflower type of the process. The bottom of the ulcer is irregular, tomentous, and covered with indurated granulations which bleed upon the slightest provocation. In the sulci separating the granulations a magma becomes deposited, composed of coagulated blood, purulent serosity, and dirt. The magma is brownish in colour, contrasting with the red tint of the granulation.

When the ulcer has attained this stage it may at a given time present a tendency to excavate, the elements composing the bottom being progressively eliminated. The edges remain raised, forming a funnel-shaped process, surrounding a crater whose surface is not smooth.

The edges of this cauliflower type require a special description. They are thick, indurated like the remainder of the tumour surface. Their surface need not of necessity be ulcerated; the limits of the epidermis are irregular and at some spots the ulcer sends off a rather long expansion towards the periphery.

The borders may be sharp-cut on their outer aspect and are abruptly raised. They frequently overlap the surface of the ulcer, forming a rather deep, circular sulcus around it. The surrounding structures continue directly with the neoplasm and contain either indurated tracts, indicating extension of the growth, or isolated nodules whose neoplastic nature leaves no doubt.

The third form of epithelioma of the dorsal aspect of the hand is the ulcerating type. In this type the growth is not raised or only very slightly so, and this applies to the thickened edges. On the other hand, the bottom is hollowed out, the process develops in depth, and soon becomes adherent to the underlying structures.

The Course of the Lesion.

In all types of epithelioma of the dorsum of the hand the secretions are not usually very excessive, but that they can be so is amply demonstrated in Case 1. They are composed of a thick, brownish, sanious liquid, which easily coagulates on the ulcerated surface, forming a crust. If a trauma intervenes this crust falls, and a hæmorrhage, which may be severe, results. The cauliflower type is the one in which loss of blood is more frequent, as the granulations form large buds, while if the hæmorrhages recur often an extreme degree of anæmia results whose nefarious effect becomes coupled with that of the cachexia.

When the ulcerative process has developed pain of very intense character occurs and may be the principal indication for operation, as was the case of the patient in Case 1. It is, of course, due to the involvement of the nervous branches invaded by the neoplasm, and when the trunks of the radial or ulnar nerves are attacked by the malignant process the suffering is intense.

When the disease has extended sufficiently the movements are interfered with on account of the involvement of the tendons and bones.

The regional invasion of epithelioma of the dorsum of the hand includes the bones, tendons, nerves, and vessels. The epitrochlear lymph node may be metastatically involved early in the process, while involvement of the lymphatics of the axilla is almost always constant, at least when the affection is far advanced. When they have formed a mass in the axilla they press upon the vasculo-nervous elements, resulting in œdema of the upper limb and severe neuralgia. General visceral metastases have been noted.

Prognosis and Treatment.

Epithelioma of the back of the hand is a serious affair, but the gravity of the case varies with the type of the evolution of the neoplasm. When this is slow it may exist for several ye rs without giving rise to any marked disturbance. The cauliflower type offers the most rapid progress.

There is one point to which attention is directed, to wit: in cases arising in subjects of advanced years the senile crust, even when ulceration has taken place, may remain stationary for years without local extension of the process or involvement of the lymphatic system, and in these circumstances the patient attributes little importance to his trouble. Then suddenly, following a trauma or the ridiculous habit, both by the laity and only too often by the physician, of applying some form of caustic, the growth assumes a very rapid development, and this is also most marked in the lymphatics, so that cases which were localised become quickly inoperable and give vent to severe or almost fatal hæmorrhage.

The prognosis, therefore, is difficult to give in any degree of precision on account of the above-mentioned circumstances, but it may be said that local removal of the growth is almost sure to be followed by a recurrence which undergoes an even more rapid evolution than the primary neoplasm.

As to treatment I have little to say, as I am of opinion that when the epitrochlear lymph node is involved nothing less than amputation at the lower third of the arm with a free removal of the axillary lymph nodes and fat even when the former cannot be detected by palpation is the only interference worthy of consideration, providing the cachexia is not too far advanced and that the general condition of the subject fulfils the ordinary requirements demanded for a successful operation.

Radiotherapy, radiumtherapy, and fulguration in no way appeal to me from the viewpoint of sane surgical principles, but I must admit that I have had no personal experience with them in the pathologic process under consideration. If the process is an absolutely local one at the time the case first comes under observation, one of these methods might be tried on condition that time be not lost if a manifest improvement does not take place very soon after the treatment is begun.

Geneva, Switzerland.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF TWIN PREGNANCY WITH ONE MACERATED FŒTUS.

Under the Care of

J. B. HELLIER, M.D. LOND., M.R.C.S. ENG.,
PROFESSOR OF OBSTETRICS, UNIVERSITY OF LEEDS; HONORARY OBSTETRIC PHYSICIAN TO THE LEEDS GENERAL INFIRMARY.

(From the Maternity Department of the Leeds General Infirmary.)

Case reported by PAT. A. H. EGERTON, *Maternity Clerk.*

Mrs. A., aged 28, mother of three children, summoned the maternity clerk on the evening of July 30th, 1917. She was first seen at 9.10 P.M., and was found standing in her room talking to some other women. She stated that she expected labour to take place in about six weeks. During the day (about midday), when washing some clothes, she had slipped and fallen backwards, giving herself what she called a "wrench." This was followed by an attack of abdominal pain, described as "dragging" and coming on in spasms. It was accompanied by a slight hæmorrhage. She did not consider herself to be experiencing true labour pains, but said the sensations were somewhat similar. At 8 o'clock the same evening she went to bed and shortly afterwards passed a partly macerated fœtus. It measured 7½ inches, and the skin was yellow, shrivelled, and waxy-looking. The placenta had not come away, and a small shrivelled cord was hanging from the vagina. The abdomen was next examined, and by palpation the uterus was found to be on a level with the umbilicus. On auscultation a fœtal heart was heard, thus proving the presence of another child. On vaginal examination little or nothing abnormal could be made out.

The patient attended at the infirmary next day, bringing the macerated fœtus with her. She had had no pain since the day before. Professor Hellier forthwith made a vaginal examination, and informed her that the head of the second fœtus was presenting. She was advised to stay in the infirmary until the labour was over, but declined as she could not leave her other children, and went home in a cab. She was attended the same afternoon by the maternity clerk, who delivered her naturally of a living, premature female child at 3.25; length about 15 in., weight not ascertained. The child was cyanosed and was very feeble. The placenta followed in 20 minutes. There was no post-partum hæmorrhage. The placenta was normal and had two separate cords. The one to which the living fœtus was attached was of normal size and consistence. The other was shrivelled and atrophic. To this cord the dead fœtus had been attached.

The second child survived for only one week. It was born the first not expected to live very long, and never recovered

ı its cyanosed condition. The mother developed a slight gestion of the lungs, probably due to pneumonia, but ɜr treatment this disappeared, and when last seen, on ust 8th, she was quite well.

ıe interesting point in this case is that it demonstrates , in a twin pregnancy, one fœtus may die, whilst the r continues to develop normally; also that the uterus carry the dead fœtus to a much later period of the nancy. In this case the onset of labour was determined he accident. Nineteen hours separated the birth of the g from that of the dead fœtus.

CASE OF CONGENITAL ANGIOMA OF THE TONGUE.

FRANK M. HUGHES, M.R.C.S., L.R.C.P. LOND.,
ASSISTANT SURGEON, GRAVESEND HOSPITAL.

IE following case is of interest in that, I believe, it is ımmon, and because of the apparent local inconvenience growth has caused resulting in a chronic dyspeptic lition.

ıe patient is 26 years of age. At birth a small swelling he dorsum of the tongue of about the size of a pea was ɔed and diagnosed by the medical man in attendance as birthmark." No pain has ever been caused by it, and e has been no ulceration or hæmorrhage from the growth. he age of 16 years the tumour had become as large as ırble, causing difficulty with mastication and consequent gestion. A chronic condition of indigestion from that necessitated the patient giving up training for his pro- on. He was advised to undergo a course of careful ng and attention to his bowels. This treatment had llent results as long as it was carefully carried out; but ect of feeding at regular times, with careful attention to ood, brought a return of the trouble.

ree weeks after joining the Army the patient was sent a hospital with symptoms suggesting appendicitis, but recovered with careful feeding. Indigestion has become gradually worse, with constant attacks of constipation. He is unable to digest ordinary food owing to difficulty of mastication. There is no history or evidence of syphilis.



The present condition of the growth is as follows:—A reddish-blue growth, the size of a large marble, situated on the dorsum of the tongue, well defined with raised edges, and smooth to the touch. On pressure the growth can be reduced in size, but immediately fills up again when the pressure is removed. Tongue is always furred and unhealthy, the portion around the growth feels indurated. Small "shotty" glands can be felt at the angle of the jaw on both sides. The patient has a sallow, unhealthy appearand has lost weight considerably during the last year.

ıas been thought inadvisable to remove the growth, as , cavernous type of angioma and would possibly be very ılt to remove without seriously impeding the use of the e owing to the fact that a large portion of the organ l have to be removed; and bearing in mind that it is a n growth and that with care and attention to diet very discomfort may be caused, the general opinion has been t is better to treat the patient from a medical rather surgical point of view.

TIONAL HEALTH SOCIETY.—The Lady Priestley ɔrial Lecture on The Child and the Home will be given r Arthur Newsholme on Wednesday, Nov. 21st, at ., in the Robert Barnes Hall, 1, Wimpole-street, ɔn, W. 1.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

The Value and Limitations of Sanatorium Treatment.

A MEETING of this society was held on Nov. 12th, Sir STCLAIR THOMSON, the President, being in the chair, when the first stage was conducted of an interesting and valuable debate on the Value and Limitations of Sanatorium Treatment. The debate was introduced generally by Dr. T. D. LISTER, physician to the Mount Vernon Hospital for Consumption, and his address is published in full in THE LANCET this week. The subject was then taken up under the three headings of the Well-to-do (Dr. DAVID LAWSON), the Middle Classes (Dr. NOEL BARDSWELL), and the Working Classes (Dr. W. O. MEEK).

The Value and Limitations of Sanatorium Treatment for Tuberculosis as Regards the Well-to-do.

Dr. LAWSON said: Unlike his less-favoured brother, the well-to-do patient seeks medical advice on slender provocation, and in this way tuberculous disease is often accidentally detected in its early phase and the patient placed under sanatorium treatment while the chances of recovery are still good. Duration of treatment is one of the vital elements of success, and its possibility confers great relative advantage upon the well-to-do patient. His mind is freed from financial cares throughout his term of treatment. For these reasons it is not unfair to expect more favourable results from the sanatorium treatment of patients drawn from the better-off classes. The term "sanatorium treatment of phthisis" should be defined in a wide sense to include all the resources of modern medicine, as well as those of its sister professions. Skilled nursing is no longer the luxury of the rich, but a routine measure available to the humblest inmate of a pauper sanatorium. The pathologist, radiologist, laryngologist, dermatologist, neurologist, and general surgeon are all pressed into the service of the sanatorium physician. Sanatorium treatment as now understood and administered secures for the patient under specially climatic surroundings and under conditions specially favourable for detailed supervision all the resources of modern medicine. Dr. Lawson then submitted the results of his own experience in 1000 sanatorium cases, dealing with their condition as they were on the point of leaving the sanatorium.

The classification adopted was based upon the consideration (see Table I.) that a patient on completion of his treatment in the sanatorium might be definitely worse than

TABLE I.—*Analysis of 1000 Cases of Pulmonary Tuberculosis Treated under Sanatorium Conditions.*

Depreciated		Improving	Appreciated	
204 = 20·4 p.c.		265 = 26·5 p.c.	531 = 53·1 p.c.	
Worse	Died	Arrest	Complete recovery	
141 = 14·1 p.c.	63 = 6·3 p.c.	170 = 17 p.c.	361 = 36·1 p.c.	

when he began treatment, in which case he was placed under the category of those whose state had *depreciated*. If his condition had so much improved that full working capacity had been restored his name appeared under those whose condition had *appreciated*. Between those two classes existed a large number of patients whose condition was undoubtedly improving, but the permanent trend of whose disease could not yet be definitely predicted when lost touch with. When evidence of acute disease tending to subside was still present they were included under the heading of *improving*. A certain number whose condition showed no definite alteration for better or worse were included under the heading of those whose condition was believed to be worse. Under *complete recovery* were included patients whose expectoration had disappeared or, if present, contained no tubercle bacilli, and in whose chests evidence of moisture could no longer be detected, who no longer presented constitutional evidence of tuberculous disease, and whose general health was excellent. Compensatory emphysema was well marked in these cases. By *arrest* was meant a similar condition with two points of difference: (1) The arrested case might still have a little expectoration from time to time, usually in the morning, containing tubercle bacilli; and (2) a little moisture in the lung might still be recognisable. In some of

these patients fine râles at the extreme apex or sternal free border remain throughout life a permanent legacy of the disease. Of the 531 cases which became perfectly well there were 54·2 per cent. in which no tubercle bacilli were found, as against 45·8 per cent. in which they were recognised (see Table II.). It might be asked: (1) What was the bearing

TABLE II.—*Analysis of the Cases whose Condition Appreciated under Treatment in Relation to the Number of Lobes involved.*

Appreciated 531 cases		
1 lobed	2 lobed	3 lobes or more
301	189	41
56·6 p.c.	35·6 p.c.	7·8 p.c.
Closed Cases—288	=	54·2 p.c.
Open Cases—243	=	45·8 p.c.

of a parental history of pulmonary tuberculosis on the results of treatment? In 112 instances one parent had suffered from pulmonary tuberculosis, in 10 instances both parents. Of cases with a negative family history 21 per cent. had depreciated and 51·2 appreciated, compared with 15·2 per cent. and 66 per cent. respectively for cases with a positive history. The result of treatment, therefore, had proved more favourable in the case of patients carrying a hereditary burden. (2) To what extent might the patient's own clinical history of certain maladies tend to limit or affect the result of treatment? (*a*) Syphilis. In 8 instances a history of specific disease was admitted. Of these the condition on discharge of 1 was worse, 2 died, and the remaining 5 did well, 1 securing arrest of the disease and 4 making complete recovery. (*b*) Malaria. Malaria occurred in 33 cases (see Table III.), of whom 8 depreciated, 9 occupied an intermediate

TABLE III.—*Malaria.* 33 cases.

Depreciated 8 = 24·2 p.c.	Improving 9 = 27·2 p.c.	Appreciated 16 = 48·5 p.c.	
Worse 7 = 21·3 p.c.	Died 1 = 2·9 p.c.	Arrest 7 = 21·3 p.c.	Complete recovery 9 = 27·2 p.c.

position and improved, and of the remaining 16, all of whom did well, 9 made complete recoveries and in 7 the disease became arrested. (*c*) Appendectomy (see Table IV.). Fifty-seven patients, or over 5 per cent. of the total had their

TABLE IV.—*Appendectomies.* 51 cases.

Depreciated 11 = 21·6 p.c.	Improving 6 = 11·8 p.c.	Appreciated 34 = 66·6 p.c.	
Worse 8 = 15·7 p.c.	Died 3 = 5·9 p.c.	Arrest 9 = 17·6 p.c.	Complete recovery 25 = 49 p.c.

appendix removed. (*d*) Pleurisy occurred as an antecedent in 114 cases and in a large majority had been present at the base upon the same side as the subsequent apical disease. (3) To what extent did certain complications limit the effect of treatment? (*a*) Glycosuria. Five cases had been met, of which 1 died, 1 made a complete recovery, and 3 appeared to be improving. (*b*) Ischio-rectal abscess had not proved common. In 1913 an analysis of 365 cases of pulmonary tuberculosis showed this complication in 15 per cent., but in the present series

TABLE V.—*Laryngeal Phthisis.* 47 cases.

Depreciated 22 = 48·8 p.c.	Improving 12 = 25·5 p.c.	Appreciated 13 = 27·6 p.c.	
Worse 12 = 25·5 p.c.	Died 10 = 23·3 p.c.	Arrest 7 = 14·8 p.c.	Complete recovery 6 = 12·8 p.c.

the percentage had fallen to 2·3 per cent. (*c*) Meningitis occurred in only 4 cases, all of which proved rapidly fatal. (*d*) Laryngeal disease was present in 47, or 4·7 per cent. Of these 12 were distinctly worse on discharge and

TABLE VI.—*Senile Phthisis (occurring after 50 years of age).* 57 cases.

Sex Incidence—Male—49 Female—8
Age " —Under 60 years—47 60 years and over—10

Depreciated 22 = 38·6 p.c.	Improving 17 = 29·8 p.c.	Appreciated 18 = 31·6 p.c.	
Worse 15 = 26·3 p.c.	Died 7 = 12·3 p.c.	Arrest 7 = 12·3 p.c.	Complete recovery 11 = 19·3 p.c.

10 died in the sanatorium. Twelve showed signs of improvement and the remaining 13 did distinctly well, in 7 cases the disease becoming arrested and in the remaining 6 complete recovery taking place (see Table V.). Of senile phthisis of 57 cases—i.e., those in which the disease appeared at 50 years of age or over (8 women and 49 men)—39 per cent. did badly under sanatorium treatment (see Table VI.). Pulmonary tuberculosis occurring in later life was both more common and more serious than many had thought. After dealing at length with the subjects of dieting and exercise in sanatorium treatment Dr. Lawson concluded by emphasising the value of artificial pneumothorax as a means of stopping dangerous hæmorrhage and in bringing about arrest in localised acute disease.

The Value and Limitations of Sanatorium Treatment for the Middle Classes.

Dr. BARDSWELL said: In virtue of the post I held at Midhurst for over 11 years I am in a position to approach the question of the value of sanatorium treatment for the middle classes with some confidence. From the first, the after-history records of all patients discharged from the sanatorium have been most carefully kept, so that the value of the work of the institution, as judged by statistics, can be determined without much difficulty. The sanatorium admits exclusively patients belonging to the more educated classes whose means are limited—clerks, school teachers, shop assistants, commercial travellers, civil servants, and members of the various professions; domestic servants and the working classes not being eligible. The average length of treatment in the sanatorium is from four to five months. The statistics I furnish, therefore, represent what some four months' treatment in a sanatorium can effect for consumptive patients belonging to the social classes indicated.

It is known to most of us that our medical statistics do not commend themselves to statisticians and actuaries; they hold that the methods we adopt are crude and inaccurate. With respect to mortality statistics after sanatorium treatment, they are agreed that the only reliable method is to compare the number of deaths that have occurred over a term of years following discharge, among patients of various ages, with the number of deaths which would have occurred had these same patients been members of the general population. The mortality rate of the general population at all ages has been determined and furnishes the means of comparison. By applying it we learn how far any individual consumptive or group of consumptives have failed to realise the life which is expected by the general population of the same age. Mortality rate can then be expressed in terms of the relation of the number of deaths which occurred, termed the "actual deaths," to the standard number of deaths, termed the "expected deaths." The mortality experience of any number of institutions may be compared with this same standard, and the results obtained compared one with the other without fear of fallacy. Thanks to the courtesy of Mr. F. B. Wyatt, F.I.A., I am able to show you some of the Midhurst results worked out on these lines. I gave Mr. Wyatt the after-history returns of 384 patients observed over a period of six years since their discharge. This number was made up of 101 cases classed in Group I. and 283 cases in Group II. All the cases had tubercle bacilli in the sputum when admitted to the sanatorium. I excluded contemporary cases in which the bacilli were not demonstrated, so that there should be no doubt that the cases dealt with were suffering from pulmonary tuberculosis.

Experience of 384 Cases Observed over Six Years.

Turban-Gerhardt group.	Actual deaths.	Expected deaths.	Ratio.
Group I. (101 cases)	17	2·510	6·8
Group II. (283 cases)	118	5·640	20·9
Total (384 cases)	135	8·250	16·4

This record shows that during a period of six years following discharge from the sanatorium the number of deaths that occurred among the Group I. cases was over six times, and among the Group II. cases over 20 times that of the expected deaths. Taking the experience of all the 384 cases, the actual deaths during the period of observation were more than 16 times as many as the expected number. When observations are extended over a longer period of years the disparity between actual and expected deaths becomes less marked. This is what one would expect. During the first few years after discharge the worst cases succumb and the death-rate is heavy; subsequently, with the survival of the more favourable, the comparative mortality is lessened. It

ay be contended that the number of cases now dealt with too small to allow of conclusions being drawn from ıe figures. This is true; at the same time I should say ıat a complete review of the Midhurst results now in ·ogress is giving confirmatory results. A similar study of e after-histories of 1449 cases treated at the Adirondack ınatorium, U.S.A., published by Lawrason Brown and ›pe, shows that the Adirondack experience has been almost entical with that at Midhurst.

Although few of us, probably, are accustomed to consider ›rtality from any disease in terms of actual and expected aths, or have a mental standard by which to judge the ınificance of statistics presented in this fashion, yet the ›rtality experience I now show you is evidence of the ıs of life which occurs among the more favourable ses despite the benefit conferred by treatment in a ıatorium. Unfortunately, there are no means of deter-ning the mortality experienced by comparable cases treated on other lines. Personally I feel sure it would be a heavier e. Reviewing carefully the after-history records year year of the Midhurst patients, I am impressed by the ›reme importance of after-care, using the term in its widest ıse. Among those who have done well, a large proportion ve been enabled to continue their treatment for some ınths after leaving the sanatorium. Change of occupation ı not been a large factor except among young men not yet nmitted to any calling, and it is this class which furnishes ny instances of successful emigration. The nature of the ployment followed has a great bearing upon prognosis. ·gy of all denominations and members of our own pro-sion show the highest proportion of permanent recoveries, largely to the fact that both can exchange unfavourable favourable conditions of work without any material loss income. Many clerks have safeguarded their future by oming commercial travellers or finding employment in ntry towns; a great many school teachers, shop stants, and civil servants also, have removed from an to rural areas with encouraging results. Among many who were unable to make any such change, ıortening of the hours of work or a long week-end for e months after discharge has proved of much value. ile treatment in a sanatorium is all-important for the eful case as a means of education and obtaining a good t on the road to recovery, the critical time begins when sanatorium is left. Success or failure is determined ng the next two or three years. It is the patient himself the general practitioner who then shoulder the responsi-y. Happily, the after-history records at Midhurst are ear evidence that it is not lost, for they represent a ifying measure of permanent success. It need scarcely ıdded that, in my judgment, sanatorium treatment for middle classes is of great value. Admittedly, my ion is a biassed one, but I have discussed this question Sir Hermann Weber, Sir Clifford Allbutt, and Sir)ouglas Powell, to mention a few only who are best ified to express an opinion, and their reply is unanimous nfirmation.

. BARDSWELL added: I accept Dr. Lister's invitation ake a few comments on his address. I agree with him the good that a patient derives in a sanatorium depends nously upon the capacity and character of its medical ·intendent. I have purposely not quoted any figures of ıdiate results; they give little information and express sonal opinion, but to be able to state whether a patient ve or dead some six or ten years after discharge is to ss data of real value. It is such records that we want of. The lack of control figures for consumptives treated wise than in sanatoriums I deplore. With regard ecial treatments and aids, Dr. Lister's experience and ›n are my own. I suppose I have tried every remedy ht forward seriously; individual cases have done ıntly on most of them when given as an addition to ıent in a sanatorium. If I had to choose two remedies those I have made use of, including all so-called ic therapies, I would ask for the old Brompton mixture, sodæ and gent., with a dash of nux vomica and the liquid t of cascara. Dr. Lister asks: Do we all know how we in respect of tuberculin and the treatment of mixed ions with vaccines? I know my own position so far as ·ium practice is concerned, but I cannot speak for ısary and city conditions generally. The after-history ; at Midhurst for the three consecutive years, during which tuberculin was employed largely, are no better than those for any three years during which tuberculin was not used at all; nowadays perhaps it is necessary to add that they are no worse. The same can be said for vaccine treatment.

The Value and Limitations of Sanatorium Treatment as Regards the Working Classes.

Dr. MEEK said that during the three years 1905–6–7, 292 patients, in whose sputa tubercle bacilli had been found, were discharged from the sanatorium at Frimley. Of 266 of these, who were traced to the end of the first year following that of their discharge, 65·8 per cent. were well and working, 24·4 per cent. were alive, and 9·8 per cent. were dead. Of 245 traced to the end of the second year following that of discharge, 56·8 per cent. were well and working, 21·6 per cent. were alive, and 21·6 per cent. were dead. Of 209 similarly traced to the end of the fifth year following that of discharge, 38·8 per cent. were well and at work, 14·8 per cent. were alive, and 46·6 per cent. were dead. These 292 were selected cases, carefully chosen by the physicians to the Brompton Hospital, and the great majority had undergone preliminary treatment at that institution, thus being under consecutive treatment for a very considerable period. The chief factors responsible for this rapid loss of working capacity in a high proportion of cases were, in the main, well recognised, and in certain directions lay opportunities for improvement—e.g.: (1) the return to faulty environment; (2) the lack of provision for prolonged treatment; (3) and for re-treatment; (4) the admission of cases unsuitable on grounds other than medical; (5) the need for earlier diagnosis.

To demonstrate the beneficial result of change of environment Dr. Meek showed tables contrasting the immediate after-histories of two groups of cases.

(A) During 1915 a group of 32 cases, presenting important features in common, left the sanatorium. They all came from urban working conditions. In all tubercle bacilli were present in the sputum at the commencement of treatment; in none were they so found at its conclusion. The average number of lobes of the lungs in which any signs of disease had been noted was 1·8. They formed an excellent collective example of the "good sanatorium case," and were classified on discharge as instances of "apparent arrest" of the disease. They all returned to the homes and working conditions in which they had broken down previously. The majority of the patients were of distinctly the better working-class type. Their homes generally were clean and not obviously insanitary, sleeping arrangements satisfactory, and wages good. The work to which they returned was of very varied character, but as a whole, neither particularly arduous nor dangerous. All those still alive had been traced up to the latter half of the present year (1917). Of these 32 people, at the time of the latest reports (averaging two years and a few months from the date of discharge) 10 (31·2 per cent.) were well and at work and had kept so; 5 (15·7 per cent.) were "fairly well" and still at work; 8 (25 per cent.) were alive, but unable to work; 9 (28·1 per cent.) had died.

(B) In the same year, 1915, out of a number of cases of relatively good prognosis who were recommended to secure improved conditions 44 were able to effect a change for the better. They were not specially selected as having only slight pulmonary lesions, for in a considerable number such lesions were quite extensive. Nevertheless, they all appeared capable of doing a reasonably full day's work and to have a fair chance of maintaining working capacity in healthy surroundings. In all tubercle bacilli were present in the sputum at the commencement of treatment, in 23 they were still present on discharge, in 21 they were not so found. The average number of lobes of the lungs in which any abnormality had been noted was 2·2. All have been traced into the latter half of the present year. They form a group roughly comparable to the one analysed above. Twenty-nine effected a change of both residence and occupation, five a change of occupation only, while ten found situations at their former employment in more suitable localities. Many made the change unaided except with advice, to others help was given in the search for work or in the removal of the home, for some situations were found, and for a few courses of instruction in motor-driving, &c., were provided. Six joined the Forces. In most instances the work and surroundings which they were able to secure were far from ideal, but constituted a marked improvement on their former conditions. Of these 44 individuals, after a lapse of time averaging a few months over two years and excluding one who was accidentally killed, 35 (81·4 per cent.) have remained continuously well and at work; 6 (13·9 per cent.) are well and at work, but have had time off from work for illness and in 4 cases further institutional treatment; 1 (2·3 per cent.) is fairly well, but not at work; 1 (2·3 per cent.) has died.

The lists, although far from being accurate statistical tables, illustrated fairly the rapid wastage on return to urban industrial life and the improved outlook under better conditions. It seemed possible that the attempt to return to working-class life in cities of large numbers of discharged sanatorium patients who were, or had been recently, cases of "open" disease might have to be abandoned as entailing great waste of life, labour, and money.[1]

[1] We hope to publish Dr. Meek's paper in full in our next issue.

Mr. H. MORRISTON DAVIES stated that the great barrier to successful medical treatment in all but the earlier stages of pulmonary tuberculosis were the mechanical disabilities. These disabilities appeared almost from the commencement. In chronic cases they gave rise to symptoms more serious even than the primary disease. They were due, on the one hand, to the fibrous tissue formation in the lung and in the pleural membranes and, on the other hand, to the anatomical and physiological conditions of the lung, of the pleural cavity, and of the surrounding walls. At first contraction of the lung due to the fibrosis could be to a great extent equalised by the falling in of the chest wall, by the displacement of the mediastinum and diaphragm, and by emphysema of the healthy parts of the lungs. An early case was, in fact, one in which the mechanical disabilities were easily compensated for in this manner. Striking improvements and even arrest of the disease could be expected, therefore, by medical treatment. Once this stage was past, and with the increase of the fibrosis, of the bronchial dilatation and secondary infection, and the development possibly of cavities, a temporary improvement only could be hoped for unless the mechanical disabilities were compensated by surgical intervention. The four methods available were: 1. Nitrogen displacement, with stretching, division, and even rupture of adhesions when necessary. 2. Partial replacement of the lung and parietal pleura by foreign substances when the disease was localised and nitrogen displacement was impracticable owing to pleural adhesions. 3. Rib mobilisation, by which operation the lung, together with the chest wall, were collapsed. This operation was a more serious one than nitrogen displacement, and was therefore done only when the latter was impossible. The type of case must be much more rigidly selected, and the results obtained were extremely gratifying. All these methods produced a general or local collapse of the lung; they allowed the fibrous tissue to contract without causing distortion of the intra- and extra-pulmonary structures. Interstitial and bronchial cavities were obliterated and the serious effects of secondary infections were abolished. The lung was at rest and the symptoms subsided. The patient was thus placed in a condition in which medical and hygienic treatment could be employed with most beneficial results. 4. Paralysis of the diaphragm by section of the phrenic nerve in the neck. The affected half of the muscle was relaxed and rose into the thorax. The symptoms due to distortion of the diaphragm owing to basal adhesions or to the drag on the muscle during nitrogen displacement were abolished. There was a reduction in the size of the lower part of the pleural cavity and a partial collapse of the base of the lungs. This was of great benefit in cases of tuberculosis or of dilatation, whether primary or secondary, of the bronchial tubes of the lower lobe. Surgical intervention must not be regarded as a method of treatment which could be carried out independently of the medical. The best results were obtained by the closest combination of the two.

The debate will be continued on Nov. 19th, when Sir R. Douglas Powell, Sir Arthur Newsholme, Dr. F. R. Walters, Dr. A. Niven Robertson, Dr. G. A. Crace-Calvert, and Dr. J. J. Perkins are expected to take part.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the West London Hospital on Nov. 2nd, Dr. A. J. Rice-Oxley being in the chair. Major W. McAdam Eccles demonstrated by means of photographs and microscopic slides an unusual case of Hermaphroditism, described as of neutral sex. The external sexual characteristics were those of a female, but testes in a low state of development were present and the uterus was absent. Dr. T. Grainger Stewart and Dr. Reginald Morton showed a case of Œsophageal Diverticulum, in which the foul breath and eructations of decomposed food frequently associated with the condition were absent. Dr. Morton, among other cases, showed a skiagram of a stomach distended by a hairball, in which the diagnosis was made by means of X rays and afterwards confirmed at operation. Mr. Aslett Baldwin showed a man who had had calculi removed from both kidneys and the left ureter, and who now had hernial protrusions from all three operation wounds. He had recently undergone operation for radical cure of a left inguinal hernia. Dr. E. A. Saunders, Dr. H. S. Souttar, Dr. S. A. Owen, Dr. G. Pernet, and Dr. Guesada exhibited other cases, or skiagrams of cases, the latter in conjunction with Dr. Morton. After an interesting discussion the meeting terminated.

ROYAL SOCIETY OF MEDICINE

SECTION OF ELECTRO-THERAPEUTICS

Necessity for Education in Radiology and Electro-therapeutics.—The Coolidge Tube.

AT the opening meeting of this section, held at the Royal Society of Medicine on Oct. 19th, Dr. G. HARRISON ORTON, the President, gave an address on the Necessity for Education in Radiology and Electro-therapeutics. He pointed out the unsatisfactory status, in this country, of radiology and electro-therapeutics and of those who specialise in these subjects. The present condition of affairs was unfair to the patient, who was often the chief sufferer, and unfair to the radiologist and electro-therapeutist. It was due to defective education, and therefore before any improvement could be expected to take place some scheme of education must be devised. The July number of the *American Journal of Roentgenology* contained a statement on the action of the U.S.A. military authorities in the organisation of X ray work for Army purposes which was in striking contrast to the methods adopted in this country. Schools for the teaching of military radiographic work had been established in charge of experts in different parts of the country, under the direct control of the Surgeon-General. Medical officers intending to do X ray work attended for three months' instruction, and were then accepted or declined according to the ability shown. Arrangements were made for the X ray examination of recruits, especially from the point of view of the condition of the chest. The numerous methods for the localisation of foreign bodies were considered, and three methods were selected to be taught thoroughly. The U.S.A. Government was defraying the expense of this organisation and teaching, and officers drew during the course of instruction the pay of their respective ranks. In this country, Dr. Orton said, practically the whole of the organisation of military X ray work had been carried out without any consultation with prominent radiologists. The authorities evidently failed to recognise either radiology as an important branch of medical science or the radiologist as a specialist. And the same thing applied with perhaps even more force to electro-therapeutics. In view of this serious situation a committee of the Section of Electro-Therapeutics was appointed in March last and a scheme had been elaborated to provide for: (*a*) A central organisation in London, housed in an institute, where teaching facilities would be available in the scientific part of the curriculum, the practical experience being available in the large hospitals. Later, if necessary, centres could be started in other towns. (*b*) A post-graduate diploma in Cambridge where a research hospital would be built. This hospital would be devoted to the scientific investigation of the many physiological, pathological, and physical problems that are waiting to be worked out. It would also be available for those who wished to work on various problems, and especially for those who were investigating with a view to the M.D. thesis. Dr. Orton concluded that as a result of what had been already done no doubt existed that the Cambridge part of the scheme could soon be in active being if the necessary financial support could be arranged. It remained to see that the London scheme was put upon a sound basis so that the two might be able to coöperate in practical teaching and research work, and provide those who desired to study these subjects with conditions of so doing comparable with the facilities available in other countries.

Dr. F. HERNAMAN-JOHNSON described a modification in the use of the Coolidge Tube of interest to those radiologists who work with a coil outfit on continuous current mains arranged on the usual "three-wire" system. Hitherto accumulators have had to be used for the heating circuit, owing to the fact that this circuit was always, with the usual connexions, charged at a high potential. Shorter and Barnard have recently shown that a tube will work perfectly well if the negative pole of the coil be grounded, and this led Dr. Hernaman-Johnson to experiment with direct heating of the filament through suitable resistances. He places these on the "neutral" side of the house supply, and connects the negative pole of his coil to them, so that earthing of the high-tension circuit takes place at the power station through the neutral wire. A steady heating current is thus obtained and the outside can be handled without any risk of shock. Dr. Hernaman-Johnson pointed out that if in future the filament of the

e can be made suitable for 200-250 volts, a very simple istance will suffice, and there will be no waste of current. also showed that all the controls and meters both for l and tube may be assembled on one trolley switchboard se to the operator's hand. These new arrangements uld greatly facilitate the use of the Coolidge tube. The erimental stage may be said to have been passed, as the tem has been in use for two months at the Cambridge spital, Aldershot, and over 200 treatments have been inistered with the Coolidge tube heated in the manner cribed.

SECTION OF LARYNGOLOGY.

Exhibition of Cases and Specimens.

MEETING of this section was held on Nov. 2nd.

r. A. BROWN KELLY, the President, having delivered a f introductory address from the chair,

ir STCLAIR THOMSON showed a girl, aged 15, who ered from a Fusiform Dilatation of the Œsophagus arently Idiopathic. He demonstrated that the interior he cavity was lined by plaques of white material which sisted largely of oïdium albicans and other bacteria. age with various antiseptics, including eusol, had failed et rid of the infection. Œsophageal bougies passed into stomach with the greatest ease.—Dr. WILLIAM HILL gested that treatment by ionisation might be successful. PRESIDENT advised dilatation of the lower end of the phagus.

r. IRWIN MOORE showed a boy, aged 8, with Lupoid erculosis of the Soft Palate, and who was also the ect of congenital syphilis. The soft palate and uvula were l, rigid, and leathery; there was œdematous infiltration he posterior pillars of the fauces, the epiglottis, and enoids. Adenoids had been removed and shown to be ially tuberculous under the microscope. A cervical d also showed caseous areas and giant-cell systems. sermann reaction was strongly positive. The blood t showed no characteristic changes.—Professor S. G. TOCK said that he had examined sections of the uvula r the microscope. In his opinion the lesion was tuber- is, although the picture was not characteristic and tubercle bacilli had been found. He considered the ition comparable to lupus erythematosus of the face.

. P. WATSON-WILLIAMS exhibited a number of draw- of the naso-pharynx as seen through the endorhinoscope. was in the habit of using Dr. Holmes's modification of ptin's instrument and employed it in preference to the oscopic mirror. The instrument was of real value in ling one to obtain a good view of the Eustachian tubes fossa of Rosenmüller and in tracing the source of pus in the naso-pharynx.

jor H. D. GILLIES and Mr. G. S. HETT showed patients were under treatment at Sidcup for war injuries to the and face. Stages in the formation of a new nose were n. Rib cartilage had been grafted under the skin of orehead and was then brought down to form the bridge e new nose. Great interest was aroused by these cases, iscussion was postponed.

ier cases and specimens were shown by—

DAN MCKENZIE: Epithelioma of the Ethmoidal finth; removal by lateral rhinotomy.

NORMAN PATTERSON: 1. Excision of the Upper Jaw for noma of Antrum and Palate, followed by Diathermy. cision of the Retro-pharyngeal Gland for Recurring pharyngeal Abscess of Tubercular Origin.

W. H. KELSON: 1. A Tonsil Forceps. 2. Paralysis of eft Vocal Cord in a man aged 39.

IRWIN MOORE: 1. Tertiary Syphilis of the Pharynx in a e aged 44, clinically resembling tuberculosis of a lupoid 2. Complete Paresis of the Left Vocal Cord, due to a stinal growth.

J. L. AYMARD: 1. New instruments. 2. Septum ens. 3. Rhinoplastic cases.

F. A. ROSE: Sarcoma of the Antrum.

WILLIAM MILLIGAN: 1. A Piece of Mutton Bone removed he entrance to the œsophagus. 2. Photographs showing al, with the aid of the fluorescent screen, of a pin n the second division of the left bronchus (pin shown). ro-papilloma of Trachea; removal by external opera- recovery. 4. Fracture of Four Rings of the Trachea; dyspnœa, operation, recovery.

WALTER HOWARTH: Case of Complete Laryngectomy.

Reviews and Notices of Books.

1. *Studies in Malaria.* By HUGH STOTT, M.B., B.S. Lond., Captain, I.M.S. Calcutta and Simla: Thacker, Spink, and Co. 1916. Pp. 190. Price 10*s.* 6*d.* net.
2. *A Plea and Plan for the Eradication of Malaria throughout the Western Hemisphere.* By FREDERICK L. HOFFMAN, LL.D., Statistician to the Prudential Insurance Company of America. Being an address read in abstract before the Southern Medical Association in Atlanta, Georgia, on Nov. 14th, 1916.

1. THIS book is of real interest and gains from the unconventional way in which the subject is approached. One of the most valuable sets of observations recorded is that of a prophylactic quinine experiment. The prophylactic dose was 15 grains thrice weekly for five months (none for two months when the regiment was in the hills) and 10 grains thrice weekly for nearly six months.

October, 1911, to September, 1912.	Total strength.	Total fever admissions.	Rate per 1000 strength.	Primary admissions.	Rate per 1000 strength.
Cos. A, C, E, G. (taking quinine)	3931	259	65·8	170	43·2
Cos. B, D, F, H. (not taking quinine)	3900	265	67·8	179	45·8

The facts to be found in the literature with regard to quinine prophylaxis are most unsatisfactory. The question could have been settled years ago by a system of "half with" and "half without" quinine, but unfortunately even at the present day the matter is one of dispute. The author's figures with regard to a curative course of quinine are not easy to follow, but apparently by 10 gr. four times a week for four months about 44 per cent. were "cured," the observation period being eight months. It would appear, however, that 75 per cent. of readmissions took place while the patients were actually undergoing the curative course. This seems peculiar and raises the suspicion that the quinine really was not taken. The author's observations on the *total* mononuclear count in malaria are of considerable interest; the percentage of total mononuclears at various temperatures from 105° F. to normal varied from 11 to 81 per cent. To be able to make a diagnosis in the absence of parasites—e.g., in the interval between treatment and relapse in simple tertian malaria—is of the greatest importance, but the value of the mononuclear count requires re-investigation, more especially as to the possible variations in health and disease other than malaria. Nor do we know how long the increase continues after a definite cure.

A defect of the book is the almost complete absence of information about parasites. Malaria, while dealt with from other than the clinical standpoint, is classified too much from that standpoint—e.g., remittent or intermittent character of the fever—whereas a knowledge of parasitic findings would have been of prime importance.

2. We gather from Dr. Hoffman's pamphlet that, by a resolution adopted at the Second Pan-American Scientific Congress held in Washington in 1916, the United States and all Pan-American countries agreed, singly and collectively, to join in an effort to eradicate malarial diseases from the Western Hemisphere. As a result of this resolution, a "National Committee (of the United States) on Malaria Eradication" was formed, of which Dr. Hoffman is a member, and he appears to have written the present treatise with the view of assisting the committee in the object they have in view. The thesis is divided into three parts: Part I., "A Plea for Organised Action"; Part II., "A Plea for Organised Prevention and Control"; and Part III., "Some Essential Statistical Considerations."

The first part contains a résumé of what has been accomplished in diminishing the prevalence of malaria in different parts of the world. Stress is laid on the fact that, despite the great wealth of the country and the extensive prevalence of the disease in certain of the Southern States, no comprehensive scientific research in connexion with malaria has as yet been undertaken in America. Apparently

the governing bodies do not fully realise the importance of the problem. In the author's opinion, action by the Government is essential to the success of any scheme for the eradication of the disease. He states that in recent years some valuable local surveys have been made by the United States Public Health Service, and many scientific papers and reports have been contributed on important technical aspects of the distribution, prevention, and control of malaria, but the effect of such work has been negatived in large measure by want of the necessary coördination of municipal, State, and Federal effort. A brief description is given of the methods employed, with such excellent results, for the eradication of malaria in the Panama Canal Zone—a model which might, with necessary modifications, be adopted in other parts of America.

Part II. deals with, and enlarges upon, the general aims and objects of the National Committee, as agreed upon at a meeting held in Washington on May 16th, 1916. The functions of this committee may be briefly summarised as follows: (*a*) To stimulate the scientific and public interest in malaria problems; (*b*) to serve as a medium through which societies and individuals may become identified with the study and prevention of malarial diseases; (*c*) to coördinate the efforts of these agencies with those of constituted Federal, State, and local authorities. It is clearly recognised that the success of any scheme depends upon adequate financial support from the Federal Government, and it is hoped that a Bill may be introduced into Congress to legalise the necessary expenditure. In addition to Federal, State, and local government coöperation, it is regarded as essential that the more important international, national, and corporate health-promoting agencies should also lend their aid in the furtherance of the practical as well as the theoretical work of the National Committee. Among other suggestions for the prosecution of the campaign the following may be enumerated. It is proposed, for example, that malaria and mosquito surveys should be made, and that the public should be educated in the importance of preventive measures. The provision of facilities for the free microscopical examination of the blood is advocated to assist in the diagnosis of the disease. The establishment of State drainage commissions and drainage districts is necessary in order to get rid of flooded areas and swamps which are a menace to health. The establishment of hospitals for the treatment of patients is regarded as a matter of importance. It is also suggested that consideration should be given to the question of how far use might be made of the natural enemies of the mosquito as a means of diminishing the prevalence of that parasite; for example, it should be ascertained whether certain fishes have been found useful for this purpose in the West Indies and Hawaii.

In Part III., with reference to certain statistical considerations, it is pointed out that the extent of morbidity cannot be accurately ascertained from mortality returns in view of the fact that the fatality rate in malaria varies considerably according to the form of the disease. Recent malaria mortality statistics for 34 American cities are given in Table IV. of the Appendix. According to this table the average rate of mortality from malaria was reduced from 8·9 per 100,000 for the 5 years ending with 1904 to 3·2 during the 5 years ending with 1914. There was, therefore, an actual reduction of 5·7 per 100,000 of population, equivalent to 64 per cent. Such figures give ground for hope that much may be accomplished by the present attempt to diminish the prevalence of malaria in the Western Hemisphere.

LIBRARY TABLE.

Rustic Sounds. By Sir FRANCIS DARWIN, F.R.S. London: John Murray. 1917. Pp. 231. Price 6*s.* net.—This book is a delightful collection of studies in literature and natural history, made up of reprinted essays and lectures and addresses delivered to such various bodies as the Eugenics Education Society, the British Association for the Advancement of Science, the Association of University Women Teachers, and the Society of Morris Dancers. It may be described as the artistic diversions of a man of science. Sir Francis Darwin is a devout lover of the beauties of nature, and was born and bred in an atmosphere of such love. In the papers entitled "The Movement of Plants" and "A Lane in the Cotswolds," as in the essay which lends a name to his volume, he gives us charming intimate glimpses of a very full knowledge of birds, trees, and plants; they are the result of studies by one who is artist and man of science combined. His experiments undertaken to prove that the "gravitation sense" of roots is to be found in the root-tip are detailed, and the interest which, it will be remembered, was evoked by these observations is renewed by re-reading them, as well as his well-known speculations on the memory of plants. Sir Francis Darwin does not agree with any theory of animal automatism. "The Pipe and Tabor" is a discourse on early rustic musical instruments, in which full justice is done to the work of that most retiring of antiquaries and medical students, the late Mr. Christopher Welch. Pipes have a fascination for Sir Francis Darwin as they had for Welch; he talks of them in "Rustic Sounds," where his personal knowledge of how to make a whistle out of a chestnut twig (elder twigs, by the way, are as often used) enables him to convict an erudite reviewer of "talking through his hat." Of course Sir Francis Darwin is an admirer of Jane Austen, and his essay on her and his tribute to her memory on her centenary is accurate and typical. He speculates on matters of heredity and eugenics, as typified by the Bennets, the Woodhouses, and the Elliots, and deplores, as other Austenites have done before, that this keen and kindly psychologist did not introduce her characters into succeeding novels, so that we could have been told what kind of children, for example, Elizabeth Darcy had. Included in the book are addresses on Francis Galton, Stephen Hales, "the father of physiology," and his brother, Sir George Darwin, the mathematician, the collection coming to an end with a delightful paper on "Dogs and Dog Lovers."

What Every Masseuse Should Know: Comfortable Grasps for Joint Movements. By VERA WADDINGTON. With Prefatory Notes by Sir RICKMAN J. GODLEE, Bart., K.C.V.O., and Mrs. ANNIE E. STEWART, and an Introduction by LAURA FAIRBAIRN. With 47 illustrations by the Author. London: Methuen and Co., Limited. 1917. Price 2*s.* 6*d.* net. Pp. 105.—Miss Vera Waddington, in a practical and admirably illustrated little book, supplies the masseuse (and presumably the masseur) with exactly what should be known by an operator who desires that the help she gives to a patient should be based upon a right understanding of principles. Massage is a combination of active and passive movements with manipulations designed to develop the action of the muscles and the mobility of the joints. Passive movements on the relaxed joints are usually performed to the extreme limit of the articulation and are carried out by the masseuse. Active movements, when free, are made by the patient under instruction of the masseuse, and when restricted are made during the introduction of resistance either by the patient or the masseuse. It is clear that throughout a course of massage the treatment can only be administered with full advantage if the operator understands what are the movements of joints, what are their capacities, and what are the muscular factors concerned here, or in breathing movements, or movements of the trunk and the head. Miss Waddington's book sets out in detail the foot, leg, hand, arm, and head movements that should be employed, and all the descriptions in the text for effecting the various abductions, adductions, flexions, extensions, and rotations are supported by the best drawings in illustration of such subjects that we have ever seen. She delineates in outline the positions to be taken up by patient and operator in the numerous movements, explaining the grasps to be employed and the manœuvres for obtaining mechanical advantage for their performance. The third part of the book deals adequately with breathing exercises. We endorse the words of Sir Rickman Godlee's prefatory note, that "it is almost safe to prophesy that her book will have the success which it undoubtedly deserves."

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Rose Annie Leir, of Bristol, the testatrix left the residue of her estate, which will amount to between £4000 and £5000, as to one-fourth in trust for the Bristol Royal Infirmary, one-fourth in trust for the Bristol General Hospital, and one-fourth to the Bristol Asylum or School of Industry for the Blind at Bristol.—The late Mrs. Helen Simpson-Hinchliffe has bequeathed by will £500 to the Halifax Royal Infirmary.—By the will of the late Mr. S. G. Harrison, of Sheffield, the Sheffield Royal Infirmary and the Sheffield Royal Hospital and Dispensary will receive £1000 each, and the Children's Hospital and the Jessop Hospital £600 each. The University of Sheffield also benefits largely under the will.

BURNS
VARICOSE ULCERS
RHEUMATISM
NEURITIS

AMBRINE

(The only Authorised Preparation of Dr. Barthe de Sandfort. Various Imitations compel us to make this statement.)

GOUT
NEURALGIA
CHILBLAINS
SCIATICA

The most efficient means and method of ensuring active **Hyperthermal - Therapy** to the practical treatment of **Burns, Varicose Ulcers, Rheumatism, Gout, Arthritis, Neuralgia,** and similar affections.



Although the dressing with AMBRINE is occlusive and adhesive, it becomes after a short period non-adhesive, and can be removed without pain, hæmorrhage, or injury to the newly forming tissues. The healing takes place without leaving scars or contraction.

May be applied with a camel-hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of wounds or extensive surfaces.

The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

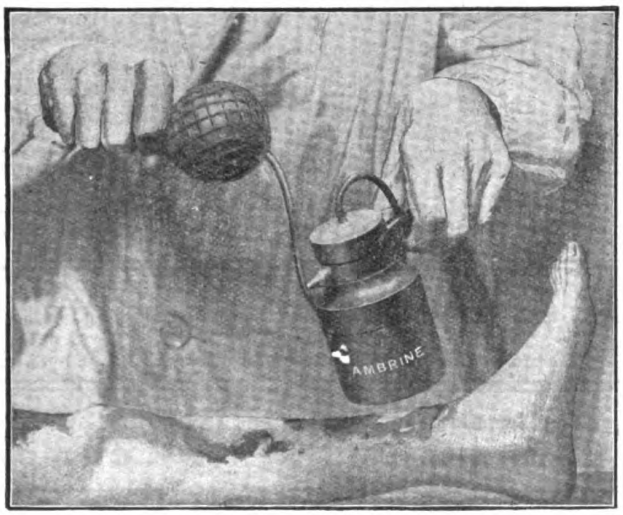
"..... The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient, because entirely painless; it is convenient to the surgeon, because easily and quickly applied. ..... It is possible that the treatment would be useful in dealing with ordinary ulcers, and in any case it is certain that the study of its application to the raw surfaces is worth pursuing. ....."

26/10/17. E———

DEAR SIRS,—I thank you for the Ambrine. I found it very effective in a chronic and very painful varicose ulceration of leg.

Please send some more Ambrine, about 5s. worth.

A. G. W.,
M.R.C.S., L.R.C.P., &c.



THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

"Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War, in reply to the Deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost-bites with Ambrine at the Hôpital St. Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ....."

Recurrent Fever
SYPHILIS

GALYL

Frambœsia
Sleeping Sickness

3000 Injections (intravenous) were given in one of our **Service Hospitals.**

"No case has given the slightest cause for anxiety, and the clinical results are very satisfactory."

Staff Surgeon's Report.

GALYL is as effective as SALVARSAN or NEOSALVARSAN on Spirochætes and Trypanosomes, more rapid in action, and free from the neurotropic and congestive action of these preparations.

FOR INTRAVENOUS INJECTIONS:—

(1) **DILUTE.**—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate, sterile distilled water only being used for the dissolution.

(2) **CONCENTRATED.**—A special outfit containing one dose GALYL, one ampoule sterilised solution, and one small filter is supplied.

DOSES.
0·10—0·15—0·20—0·25—0·30
—0·35—0·40.

(3) FOR INTRAMUSCULAR INJECTIONS:—

GALYL is supplied in **GLUCOSE SOLUTION.**

DOSES.
0·10—0·15—0·20—0·30—0·40.

THE IMPROVED INTRAMUSCULAR INJECTION.

A STABLE SOLUTION *NOT* an Emulsion.

The GALYL is in the form of a Sodium Salt in a weak solution of Glucose. This is much easier to use and more rapidly absorbed than the oily emulsion. It is in every way identical with the intravenous—efficacy, dose, price, &c., only differing in administration.

Thorough and exhaustive tests in various parts of the Kingdom have proved it to be equal in every way with the intravenous; moreover, patients may resume and continue their occupations without inconvenience after injection of intramuscular Galyl.

Further Literature sent on Application to Medical Practitioners and Pharmaceutical Chemists by the Sole Agents for the British Empire—

THE ANGLO-FRENCH DRUG CO., Ltd., Gamage Building, LONDON, E.C. 1.

Telephone: HOLBORN 1311. (Late M. BRESILLON & Co.) Telegrams: "AMPSALVAS, LONDON."

RATIONAL TREATMENT OF CONSTIPATION

By the double action of secretions and peristalsis.

OPOLAXYL

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines with vegetable extracts of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen with their hematopoietic and antitoxic properties.

It is a normal regulator of the gastro-intestinal functions, consequently it improves the metabolic exchanges of the entire organism.



Opolaxyl does not lose its efficacy by prolonged use, its effect is gentle and constant, without the least irritation.

It is not merely a purgative, it stimulates the defective organs and revives the normal equilibrium, it has a lasting effect by reason of it rebuilding the organs, thus correcting diminutional function.

H——, Scotland, 8th Oct., 1917.

DEAR SIRS,—Having derived considerable benefit from the use of Opolaxyl tablets in my own personal case, I write as a practising physician to ask if you would make any reduction of price in the event of my sending you an order for a fair quantity, say, one dozen bottles.—Yours faithfully,

—— ——, M.D.

OPOLAXYL is put up in small size tabular form and should be swallowed without crunching, at bedtime or before breakfast. DOSE.—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

LITERATURE and CLINICAL REPORTS on REQUEST.

THE ANGLO-FRENCH DRUG CO., Ltd.,

(Late M. BRESILLON & Co.),

'Phone: HOLBORN 1311. **Gamage Building, Holborn, London, E.C. 1.** Telegrams: "AMPSALVAS, LONDON."

The Scientific Treatment of INFLUENZA and allied ailments.

KINECTINE

According to Dr. MOUNEYRAT, the discoverer of Galyl and Hectine (the widely adopted Salvarsan Substitutes).

FORMULA:

Chlorhydrate of Quinine c. Hectine—i.e., *Benzo-sulfone-para-amino-phenyl-arsenate of Quinine.*

Non-toxic, produces no ill-results.

Easily taken (tablets) and well tolerated.

Highly satisfactory clinical results.

Not only a Prophylactic against, but a specific in

INFLUENZA, Catarrh, Coryza, NEURALGIA,

Malaria, &c.

H.M.S. ——, 27-7-17.

SIR,—I enclose P.O. for the tube of Kinectine. The drug has given every satisfaction.

W. B. H. W., Surgeon, R.N.

The Anglo-French Drug Co., Ltd., Holborn, London, E.C.

Medical Treatment of CANCER.

CUPRASE

Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid.

The numerous clinical reports from Doctors of repute in various countries give cases of a great variety. In all of these **pain has been eliminated,** and in a good percentage **cures are claimed,** and in no instance **any undesirable effects.**

Its *easy application* (subcutaneous injections) places it within the reach of all practitioners. It *is not toxic.*

Disappearance of the Pain.

Return of Sleep.

Increase of Appetite,

Colour and Strength.

WARWICKSHIRE, July 1st, 1917.

DEAR SIRS,—Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower-like growth has disappeared with its offensive discharge.

This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,

(Signed) B—— B——, M.R.C.S., L.R.C.P

THE LANCET.

LONDON: SATURDAY, NOVEMBER 17, 1917.

The New Voluntary Rationing Scheme.

THE scheme of voluntary rationing outlined by Sir ARTHUR YAPP this week should appeal to all classes of the community. When we are assured that a faithful adherence to the limited amounts of the staple foods set forth will save a grave situation, it becomes a national duty on the part of everyone to fall into line, while what strikes us at once is that no hard dietetic or physiological sacrifice is called for. Economy essentially is enjoined for the staples, but, of course, economy is desirable also as a patriotic effort in regard to all foods. The staple foods are bread, flour and other cereals, meat, butter, margarine and lard, and sugar. There is no rationing suggested outside this list, and it will occur to many in what directions the foods in the rationing scale may be supplemented or replaced. Potatoes, for example, are not included, and as a valuable source of carbohydrate supply they may be largely employed to eke out the stock of scheduled food-stuffs and so save the staples. In addition, an exchange can be made in certain cases, notably with regard to bread and meat. Thus, any person may take half a pound of meat over and above his meat ration in exchange for half a pound of bread to be deducted from his bread ration, and conversely any person may take half a pound extra of bread in exchange for meat. The scheme bears evidence of being well thought out from the economic point of view, while it provides a physiological sufficiency for all. The public would do well to bear this point in mind, for it is important to remember that a voluntary rationing scheme which provides amply for all physiological needs is much less a hardship than actual famine, while its adoption means the releasing of so much tonnage, and adding to the efficiency of transport services. In plain words, the individual who loyally enters into the spirit of the scheme is helping to win the war, *and is doing so in contradiction to no law of physiology or of medicine.*

It is easy to see that the Director of National Economy was guided in drawing up the scheme by the advice of recognised scientific authority. We find in it, for example, the substance of a number of recommendations contained in an article entitled "The Food of the Nation" by Dr. EDMUND SPRIGGS, which was published in THE LANCET of Feb. 10th, 1917. The valuable report on "The Food Supply of the United Kingdom," drawn up by a committee of the Royal Society last year, has, no doubt, also been of assistance. It will be remembered that this Committee included the professors of physiology in the Universities of London, Glasgow, and Dublin, and the professor of bio-chemistry in the University of Cambridge.

The following table gives at a glance the proposed new rations:—

Adult Rations Per Head Per Week.

MEN.	Bread. lb. oz.	Other cereals. oz.	Meat. lb. oz.	Butter, Margarine, Lard, Oils, and Fats. oz.	Sugar. oz.
1. Men on very heavy industrial work or on agricultural work	8 0	12	2 0	10	8
2. Men on ordinary industrial or other manual work	7 0				
3. Men unoccupied or on sedentary work	4 8				
WOMEN.					
4. Women on heavy industrial work or on agricultural work	5 0				
5. Women on ordinary industrial work or in domestic service ...	4 0				
6. Women unoccupied or on sedentary work	3 8				

FOR ALL ADULTS.

The "bread" rations include all flour, whether used for bread or for cooking. Flour may be taken instead of bread at the rate of ¾ lb. of flour for every pound of bread.

The "other cereal" rations include oatmeal, rice, tapioca, sago, barley meal, cornflour, maize meal, dried peas, beans and lentils, and all cereal products except bread and flour. The weight given is the weight of the dry article, as bought. If the full bread ration is not used, the amount saved can be taken in other cereals at the rate of ¾ lb. of cereals for every pound of bread saved.

The "meat" rations include the average amount of bone, which may be taken as one-quarter of the weight of the actual meat. Any parts of meat (such as rump steak, bacon, or suet) which are bought without bone must count for one-quarter more than their actual weight. On the other hand, any bone in excess of a quarter of the actual meat bought may be deducted. Poultry and rabbits may be counted at half their actual weight. The meat rations include suet.

It will be seen that Sir ARTHUR YAPP divides the population into six sections, three for men and three for women. Children are to receive their reasonable ration of essential foods, and, as their needs differ so greatly, a definite ration has wisely been omitted for them. Broadly, the scheme provides more bread but less meat and sugar. The discrimination in regard to individuals in different occupations in life is well in accord with physiological considerations and common-sense. Clearly, the allowance should be highest for those carrying out heavy industrial or agricultural work. Next to be considered come those employed in ordinary industrial work, while unoccupied persons or those engaged in sedentary occupation will admit that the food demands in their case must come last. This class includes the more thoughtful section of the population, and they will recognise the simple truth that the machine which is doing most work requires most fuel. This important point was missed, we think, in previous proposals which provided, for example, an all-round weekly allowance of 4 lb. of bread or its equivalent in flour. Sir ARTHUR YAPP now lays down that men on heavy work should have a weekly allowance of 8 lb. of bread, women 5 lb., men engaged on industrial work 7 lb., and women 4 lb., and sedentary persons (men) 4 lb. 8 oz. and (women) 3 lb. 8 oz. Cereals other than bread are now rationed at 12 oz. per week all round. Previously there was no control in regard to these allowances. The quantity of meat allowed to both men and women is 2 lb., as against 2½ lb. under the former proposals. Fatty foods, butter, margarine, and lard, also were not previously rationed, but now they come under an allowance of 10 oz. per week, to which no exception can be taken physiologically, though the difficulties of cooking are obviously increased. The allowance of sugar was previously ¾ lb., but it is now fixed at 8 oz., where it has been for some time.

These are the principal features of the scheme. Lord RHONDDA, the Food Controller, has definitely stated that unless the new scale of voluntary rations is generally adhered to there is nothing for it but compulsory rationing. We feel confident that the nation will not wish such an undesirable conclusion to the attempts to deal with our food problems in terms free from coercive measures. The rationing suggested is eminently reasonable and designed to inflict no excessive hardship on anyone; it is easily a living allowance. The success of the scheme depends, of course, on the temper of the nation; but that should not be in doubt when the assurance is clear that the allowances set forth are adequate to individual needs.

War-time Prescribing and Dispensing.

WHEN, some three months ago, an order of the General Medical Council was gazetted which deleted from the British Pharmacopœia, until further notice, preparations containing glycerine or sugar, it was suggested in THE LANCET that an authoritative series of formulæ should be established to take the place of those which had been withdrawn. Some such action as this was clearly necessary in order to secure uniformity in dispensing and so obviate the probability of a patient being supplied with two different kinds of medicine dispensed according to the same prescription. Within a short time of the gazetting of the General Medical Council's order the Pharmaceutical Society set in motion the necessary machinery for preparing a series of formulæ, and these have now been published as an addendum to the "British Pharmaceutical Codex," 1911. This addendum contains not only substitutes for pharmacopœial compounds, but substitutes for other commonly prescribed glycerine and sugar preparations, the number of formulæ being over a hundred. Generally speaking, the substances which replace the sugar in the pharmacopœial formulæ are: (1) A mixture of tragacanth, chloroform, and distilled water, known as syrupus factitius or syrup substitute; and (2) diluted glucose, consisting of 90 parts of glucose and 10 parts of distilled water. In cases where these are not used the sugar is omitted altogether, as in cod-liver oil emulsion; in compound liquorice powder the sugar has been replaced by maize or rice starch. Where glycerine has been replaced by tragacanth and chloroform, as in the glycerines of carbolic and tannic acid, the strength has been diminished, since the preparation in its new form is less viscous and more readily absorbed. In a considerable number of preparations it has been possible simply to omit the glycerine. A list of these and specimen formulæ containing sugar and glycerine substitutes is given on p. 766.

It remains to be added that the Pharmaceutical Society has submitted these new formulæ to the British Medical Association, and it has been mutually agreed that as from Dec. 1st the new preparations should be used for prescribing and dispensing all new prescriptions. So far as dispensing under the National Health Insurance scheme is concerned, it is understood that all local insurance formularies will be revised simultaneously on the appointed date by the substitution of the new formulæ for the deleted Pharmacopœial preparations in the place of the ingredients in any formula including glycerine or sugar. This will not entail the reprinting of the formularies if both panel practitioners and pharmacists are instructed by their respective committees that the new alternative formulæ must be used. It will not be necessary for prescribers to concern themselves about the names of these modified preparations, as the original titles have been retained and the doses remain approximately the same. It will suffice, therefore, if the prescriber merely adds W.E.F.—which means, of course, War Emergency Formulary—to the name of the preparation. It has not been possible in many cases to preserve all the physical properties of the original glycerine- and sugar-containing preparation as regards either appearance or taste, and it will clearly be advisable for the pharmacist who dispenses an old prescription containing a sugar or glycerine ingredient to inform his client that any difference that may be noted in the medicine is due to a war-time emergency exchange of adjuvants or other components, and that the activity and efficiency of the medicine have been in no way impaired by the modification.

Annotations.

"Ne quid nimis."

AUTOMATIC WANDERING.

AT the request of the Minister of Pensions the Local Government Board has forwarded to the various boards of guardians a brief Memorandum on automatic wandering. It appears that the Minister of Pensions has had his attention drawn to certain cases of discharged soldiers "suffering from neurasthenia or epilepsy, and that symptom of these conditions which is described as 'automatic wandering,' and is often accompanied by loss of memory." In these cases soldiers have occasionally found their way to Poor-law institutions and have been there detained for observation in the mental ward, and have in some instances, it appears, been sent to a lunatic asylum. The suggestion is made that where any such men are received in a Poor-law institution inquiry should be made of the Special Medical Board for Neurasthenics "to ascertain whether neurasthenia was the cause of discharge from the Army" before arriving at any conclusion as to the disposal of such cases. It is satisfactory to learn that official cognisance is now taken of a difficult class of case, which, though no doubt small in numbers, is deserving of intelligent investigation and in no way merits summary treatment. In the ordinary civilian instances of the condition the diagnosis in practically every case lies between hysteria and post-epileptic confusional states, and to come to a definite conclusion is not always easy. To take the latter first: there may, of course, be a definite history of major epilepsy or obvious evidence of epilepsy, under which circumstances

ifficulties are not likely to arise. There may, however, be but the briefest of *petit mal* attacks, which ave escaped observation and are quite out of proortion to the severity and duration of the confuional state. Where such is the case it is imperative keep the patient under careful observation, and is is the more easy as in post-epileptic fugues the otal duration is certain to be shorter than in many ases of hysterical fugues. In the latter the conition may continue for days, weeks, or months. It ay be associated with a complete change in personlity, as in the historical case of the "Lady of acNish," and in many others recorded by Rayond, Janet, Courtney, Coriat, Morton Prince, Weir itchell, and others. Some two years ago a case ttracted not a little public attention in which a ell-known tennis player was found unlawfully espassing on the Grosvenor-road railway bridge d was sentenced to six months' imprisonment, ut on appeal was able to show that he uffered from automatic wandering. The case as commented on in our columns[1] at the time d its significance noted. Fugues are not mptoms of neurasthenia, properly so-called, but hysteria, and we suppose it may be owing to the exact popular use of the latter term that the thorities seem to be unwilling to refer to it in ficial communications on functional disease. The portance of the Memorandum consists in its peal to medical officers to be on the look-out for rtain of the more uncommon phenomena of rvous disease and to familiarise themselves with e possibility of their appearance. One of the ghest manifestations of medical knowledge is ecisely the recognition of the nature of a case of hich no previous instance has come under the tice of the observer, but if he does not know hat to look for he can scarcely be expected to oid mistakes. Of these undoubtedly one of the ost unnecessary is the transference of an uncognised case of automatic wandering to a lunatic ylum. Signs are not wanting that an outcome of e medical lessons of the war will be a resolve to prove on the, at present, altogether inadequate andard of teaching in nervous and mental disease this country.

CHESTNUTS AND ACORNS IN WAR SERVICE.

THE suggestion that the horse chestnut might be ed to save a certain amount of food material as source of carbohydrate in the manufacture of unition agents has, we believe, been widely acted on, and a substantial collection has been made. an annotation on the subject in THE LANCET of me 16th we pointed out that probably the acorn uld serve a similar purpose, and perhaps this ggestion has caught the attention of the authoies, for recent investigations have been underken which show that the acorn yields even ore carbohydrate than the horse chestnut. a meeting of the Society of Public Analysts d other Analytical Chemists last week Mr. lian Baker and Mr. R. F. E. Hilton communicated interesting paper upon the subject in which e recorded a number of analyses recently ade of chestnuts and acorns. In the chestnut e total amount of starch varied from 21·9 per nt. to 47·8 per cent., and the total sugars m 11·7 per cent. to 19·1 per cent.; in the acorn e starch varied from 55·7 to 57·1 per cent., and e total sugars from 6·8 to 8·98 per cent. The variations in the cane-sugar content, it is pointed out, may possibly be correlated with the degree of ripeness. The diastase in the chestnut behaves like the diastase of an ungerminated cereal. No diastase was found in the acorn either before or after germination. The authors state that acorns or chestnuts, with their full moisture content, yielded after hydrolysis with acid from 11·5 to 12·7 per cent. of alcohol, or 32 to 36 gallons of absolute alcohol per ton of nuts collected. A big collected harvest of acorns and chestnuts, therefore, means that a considerable proportion of food material can thus be replaced by raw products which are not humanly edible.

[1] THE LANCET, August 7th, 1915.

DOUBLE OPHTHALMIA IN CEREBRO-SPINAL FEVER.

AT a meeting of the Société Médicale des Hôpitaux of Paris, MM. A. Siredey and L. Martin reported a case of cerebro-spinal meningitis with a very rare complication—double ophthalmia.

A domestic servant, aged 17 years, became ill with acute cerebro-spinal meningitis on March 14th, 1917. When seen on the third day she was in a state of violent delirium with opisthotonos. The pupils reacted to light and there was slight strabismus of the left eye. Lumbar puncture yielded a milky fluid containing polynuclear cells and meningococci. An injection of 40 c.c. of anti-meningococcic serum was immediately given. On the following day (March 17th) there was no improvement, and the opisthotonos was so severe that the face was absolutely perpendicular to the axis of the neck. There was slight dyspnœa with some cyanosis. The temperature was 100·7° F., and the pulse 70. A slight degree of conjunctivitis was present. Lumbar puncture was repeated, 35 c.c. of thick fluid were removed and 40 c.c. of serum were injected. On the 18th the patient was worse; the temperature was 102·2°, the pulse was 100, the respirations were 62, and the delirium had given place to coma. The left cornea was completely opaque and of a uniform grey colour, and the ocular tension was reduced. There was slight conjunctivitis of the right eye and the lids were stuck together. Several attempts were made to perform lumbar puncture, but only blood mixed with a grumous, almost caseous, substance could be obtained. On the 19th the right eye was in the condition which has been described in the left, the dyspnœa and cyanosis were marked, the pulse was uncountable, and death took place in the evening.

Metastatic ophthalmia is a rare complication of all forms of meningitis. Contrary to what happened in the case under notice, it usually occurs late in the disease. Abundant exudation forms behind the cornea, and the eye becomes soft from atrophy of the globe. The ocular prognosis is hopeless. As a rule, the ophthalmia is unilateral. M. Netter thinks that the position of the patient has considerable influence in determining the eye which is affected, which is usually the eye of the side on which the patient lies. His view is borne out by the present case. The left eye was the first affected, and the patient constantly lay on that side from the onset of the disease, but on the 18th she began to lie on the right side, and the ophthalmia of the right eye followed.

A NEW MANUSCRIPT OF THE HIPPOCRATIC CORPUS.

OF two classical works attributed to celebrated medical authors probably neither was really written by the assigned author. These are the *περὶ ἑβδομάδων* of the pseudo-Hippocrates and the pseudo-Galen's commentary upon the first 17 chapters thereof extant in an Arabic version. The Hippocratic treatise is of far the higher importance because of its extreme antiquity, it having been alluded to by Plato and numerous authors down to recent times, while the information which it affords of ancient pathological

theories is useful. There is a Greek Codex of the work in the Bibliothèque Nationale; also a Latin version there and in the Ambrosian Library. Our reference to the Hebdomad is prompted by the fact that some fragments of the Greek recension were discovered recently, and these have been studied and assigned to the proper places in the Paris Greek text by Dr. von W. H. Roscher, of the University of Athens. Unfortunately, his book "Die Hippokratische Schrift von der Siebenzahl" is published at Paderborn and so not at present available for scholars here. It is a curious thing that among 110 palimpsests, found in various libraries during the last century, from which some valuable portions of classical literature have been recovered, only one containing eight pages of the "Mulomedicina" of Vegetius, which is in the St. Gall library, is of a medical character. Probably medical works were too useful for their parchments to be sold to the scribes to be cleaned and used over again for theological polemics, and sermons of the early fathers.

ANTIDYSENTERIC SERUM AND SERUM DISEASE.

WITH the production of an antidiphtheritic serum of high potency the appearance of serum disease, so frequent in the early days of antitoxic treatment, diminished almost to vanishing point. But the question will become a practical one again in connexion with a serum which is only potent in massive doses. Sir Patrick Manson, in the new edition of his valuable manual,[1] tells us that this is the case with antidysenteric serum even in polyvalent form. In view of the extensive outbreak of dysentery in the Central Empires—in Prussia alone there were 3802 cases in the third week of September with 550 deaths—serum in large doses is now being extensively used, and the opportunity presents of a fresh study of serum disease. Dr. Gottfried Ewald, consulting physician to reserve troops (Landwehr), deals with the results in an article to which first place is given in the *Münchener medizinische Wochenschrift* for Oct. 9th. He distinguishes reactions, whether immediate or accelerated, and serum disease proper. The former, which have their analogue in experimental anaphylaxis, are hardly ever seen in German reserve troops because, as the author says, their youth was, as a rule, passed in the time previous to the introduction of serum therapy. Once in a patient to whom the author gave on successive days 80, 60, and twice 30 c.c. of serum with a further dose of 50 c.c. ten days later, the last dose was followed in two hours by painful swelling at the site of injection and an immediate rise of temperature. In the case of a young Pole who was known to have received diphtheria serum two years before, and to whom on this account the doctor in charge hesitated to give dysentery serum at all, Dr. Ewald adopted without untoward result the Friedberger method of starting with ½ c.c., giving 15 c.c. four hours later, the same dose the next day, and 10 c.c. on the third day. Occasionally, Dr. Ewald thinks, congenital susceptibility accounts for the immediate reaction at the first injection. As we were familiar with it 20 years ago serum disease is characterised commonly by fever and exanthem of urticarial type: more rarely rashes occur resembling scarlatina or measles, or joint pains, swelling of the lymph glands and of the spleen are noted. The diagnosis from typhoid is occasionally difficult in cases with continued high temperature, but the leucopenia of typhoid, although occasionally simulated in serum disease, is much less constant. The incubation period is generally given as 8 to 12 days, but in Ewald's experience was much more variable, at shortest 3 to 4 days, and reaching rarely 14 to 18. Five to 15 days were the more usual limit. He found no difference in the incidence of serum disease from the use of the Höchst serum, the Oberursel serum of Gans, or that of the Saxon Serumworks, and his general conclusion is that no one should be deterred from giving dysentery serum by the fear of anaphylactic reaction, especially as the Friedberger anti-anaphylactic method seems to be effective in critical cases.

[1] Tropical Diseases. Sixth edition. Cassell and Co. 1917. Pp. 968. Price 16s. net.

A NURSES' BENEVOLENT FUND.

AT the request of Sir Arthur Stanley, chairman of the College of Nursing, Limited, the British Women's Hospital has undertaken to raise money to serve the double purpose of an endowment fund for the training of nurses and of a benevolent fund to assist nurses who have suffered mentally or physically in the war. The fund is to be called the Nation's Fund for Nurses, and judging from the success achieved by the British Women's Hospital in raising money for the Star and Garter Home at Richmond their present appeal is likely to meet with the response which it deserves. The question of the relation of this fund to the provision made for nurses in the new Royal Warrant came up in the House of Commons.

Major Chapple asked the Parliamentary Secretary to the Ministry of Pensions whether his attention had been drawn to an invitation for subscriptions to provide endowment for the College of Nursing and a benevolent fund for individual nurses themselves; whether he was aware that this appeal was supported by Sir Douglas Haig on the assumption that the funds so subscribed were to be used for nurses who had lost their health during the war, and that Sir Douglas Haig said that this was most necessary; and whether he would state fully what the Government proposed to do for nurses in order that the nursing profession might be relieved from anxiety in the matter and in order that the subscribing public might know whether the immediate financial need was for a college for the training of women not now nurses or for the help of nurses who had served in the war and had suffered in consequence. Sir A. Griffith-Boscawen replied that he had seen in the newspapers a notice of the fund referred to. He said that the provision made by the State for nurses disabled through war service was set out in the Royal Warrant of August 1st. This provision was on far more liberal a scale than previously, and he did not doubt that the organisers of the fund would take account of the assistance provided by the State in deciding how their funds might best be applied.

It is quite certain, however, that the Royal Warrant will no more meet all the hard situations met with among nurses than it will do so in the case of doctors; and as we have appealed to the generosity of the public in regard to the medical War Emergency Fund, so we do now on behalf of the Nation's Fund for Nurses.

Dr. Alexis Carrel, who was to have delivered the Harben Lectures at the Royal Institute of Public Health in the last week of this month, has been detained by official demand in America.

FOOD ECONOMY.—In connexion with the League of National Safety, which has been formed as part of the Food Economy Campaign, Lady Hunter, the wife of General Sir Archibald Hunter and honorary president of Ladyworkers, will organise voluntary lady helpers to deal with the application cards as they are forwarded to Grosvenor House.

PERFUSION OF THE HEART WITH NICOTINE.

BY D. T. BARRY, M.D. R.U.I., F.R.C.S. ENG.,
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THE action of nicotine on the heart has been investigated by many workers, whose attention has chiefly been directed to the results of dropping the drug upon its surface in various concentrations or by injection into the circulation. A few well-known works bearing on this may be quoted from at the outset.

Pembrey and Phillips[1] state that injection of the drug into the circulation of a frog causes the heart to stop with the ventricle contracted and the auricles engorged with blood. Dropped on the heart in a 0·1 per cent. solution, these observers say that it causes slowing in two or three minutes, and when this occurs stimulation of the vago-sympathetic nerve, which previously stopped the heart, is now incapable of causing arrest, while stimulation of the crescent still causes stoppage. This is interpreted as a paralysis of the pre-ganglionic fibres of the vagus, while the post-ganglionic fibres are unaffected.

Brodie[2] shows a record in which slowing is caused by a weak solution in a few seconds. He states that the drug first stimulates and then paralyses nerve cells and strong doses paralyse nerve fibres.

Stirling[3] says that even with a full nicotine effect sinus stimulation causes acceleration due to excitation of accelerator fibres which have no cell in their course in the heart. There is no account of an appreciable stoppage of the heart under its influence, but permanent arrest by a drop or two of pure nicotine.

In the experiments here about to be recorded the frog's heart was systematically perfused with nicotine in varying strengths and a large number of observations made on more than one hundred hearts of *Rana temporaria*. Some hundreds of graphic records have been obtained.

Method.

The special cannula previously described by me[4] was inserted into the vena cava below the liver as described by Mines.[5]

The nicotine was mixed with Ringer's solution and neutralised with dilute sulphuric acid until the CH was about 1×10^{-8}, as shown by indicators. Neutralisation is important, as the degree of alkalinity of even a very weak solution of nicotine has a deleterious action.

The velocity of flow of the perfusing fluid could be varied by altering the levels of the flasks by a rack and pinion adjustment, a range of 1 to 4 c.c. per minute being given, which was uniform in all three flasks.

The effects of stimulation of the vago-sympathetic nerve, of the intracranial vagus and of the sympathetic, independently, were tried carefully in many instances before, during, and after nicotine action. In this connexion it is necessary to mention that vago-sympathetic stimulation often gives a different result in the heart which is being perfused with Ringer's solution from that given before perfusion was begun. (Fig. 1.) The same applies to stimulation of the intracranial vagus. The lower the pressure of perfusion the greater is the resemblance between the pre- and post-perfusion stimulus. Attention has also been called to this by Ponirovski.[6] Even the tension of the lever threads, especially in the case of the auricle, when no perfusion is taking place, tends to cause escape.

A standard stimulus was employed throughout, the secondary coil being fixed in one position and the primary current from a couple of Leclanché's cells regularly tested with a voltameter. Of 50 frogs examined during the month of March arrest of the heart beat, varying in duration from a few seconds to a minute, was elicited by a vago-sympathetic stimulus in 30. Many of these when perfused and attached to the levers exhibited merely some slowing as a result of the stimulus, but about half of them showed acceleration instead. (Fig. 1.) This record[7] shows that the vago-sympathetic effect in the empty heart (the aortæ were cut) is much slowing, with a great fall of ventricle tone. The ventricle lever was raised between the arrows as it fell on to the signal marker. At the first gap in the tracing the cannula was inserted into the vein and perfusion be The third signal shows the changed response to the s stimulus—viz., a marked augmentor effect. The rest of record will be referred to later.

After 10 or 15 minutes' perfusion the inhibitory effe often restored or restored in part; at any rate, after interval the response is pretty uniform.

Action of Nicotine.

It is considered by many that nicotine affects nerve chiefly, with little or no depressing action on nerve fi Stirling's[8] observation that accelerator nerves are active with a full nicotine effect suggests the quest What is meant by a full nicotine effect and how i established? One or two minutes' perfusion with a st solution, such as 0·5 or 1 per cent. of nicotine, will alv cause complete arrest of the beat for several minutes, loss of irritability of the muscle, and in this phase, of cou there is no contraction, not to mention acceleration, fro muscle stimulus. The stock of material for contractio not altered in amount by drugs, as mentioned by Burrid Nor is it diminished by 1 or 2 c.c. of a 0·5 per cent nicotine, so that the contractions return spontaneousl such a case, and when they do a stimulus which, prio nicotine action caused acceleration, now fails to do whether it be through nerve or muscle. (Fig. 2.) record shows that even a 0·2 per cent. solution can dep accelerator fibres. Of course, it is possible that acceler action here is merely counterbalanced by inhibitor stim tion at the same time, but this would apply to the nicotine stimulus also. Stimulation of the sympath alone has been noticed often to be without effect on during nicotine action. First, acceleration caused b vago-sympathetic stimulus, next the effect of the nicotir shown, and after some recovery from this the same stim fails to cause any acceleration, which it does cause, h ever, again (third signal) on washing out the drug Ringer's solution at R. Beyond raising the auricle l slightly from the great sweeping movements of the lc one at the thick lines and stopping the drum at S and R about half a minute nothing was changed throughout ex the perfusing fluid.

The action of nicotine may be considered from diffe standpoints. Taking the two factors, (A) nerve and (B) mus the relative importance of which in cardiac phenomena given rise to much discussion, the former exhibits inhibi and excitor elements and the latter has to be subdivi into auricular and ventricular muscle and the muscle necting the two, which for convenience is here referred t the A.V. bundle.[10] The effect of the drug, too, on the put of the heart in a certain phase of its action has b tested, and this effect is in the direction of increased w The cardiac effects of the drug are certainly worthy of c attention, whether we consider them as applied specific to the elucidation of the many secrets still remaining in heart mechanism, practically all possible factors in wl are influenced by it more or less independently, or as more general significance of the phenomena observed. principal immediate effects of a 0·5 per cent. solution h been already stated, but attention has been chiefly dire in these experiments to weaker solutions—namely, 0 1 0·2 per cent.—which it will be well to consider first general way.

On a fresh heart the effects of a 0 1 per cent. solutio nicotine are somewhat as follows: Slowing of the rate in usually before the end of the first minute, with or witl a previous acceleration; the auricle beat is increasec amplitude, while that of the ventricle is shortened and sh incomplete diastole. This weak solution if dropped on heart while it is being perfused has very little effect on rate and causes a very slight tonus or none. It requir strength of nearly 1 per cent. to cause an appreciable when dropped on the Ringer perfused heart, while in mediate solutions of 0·2 or 0·3 per cent. used by drop generally cause some slowing and increase of auricle bea like case.

Though the heart becomes inured to the drug in suc way as to recover much of its normal condition unde

[1] Pembrey and Phillips: The Action of Drugs on the Heart, p. 58.
[2] Brodie: Essentials of Experimental Physiology, p. 132.
[3] Stirling: Outlines of Practical Physiology, p. 404.
[4] Barry: THE LANCET, July 1st, 1916, p. 14.
[5] Mines: Jour. of Physiol., 1913, vi., 186.
[6] Ponirovski: Publications of the Veterinary Inst., Kharkov, Jan. 13th, 1916.
[7] All records read from left to right, the upper tracing being that of the auricle, the time of the drum movement being 1 cm. per minute except where otherwise indicated.
[8] Stirling: Loc. cit.
[9] Burridge: Quart. Jour. Med., 9.43; 9.271, 1915, 1916.
[10] In the anatomical sense the connecting muscle between au and ventricle in the frog's heart is not a bundle, but it is physiologi equivalent to the mammalian bundle, and the designation is adh to because it is less confusing than other terms.

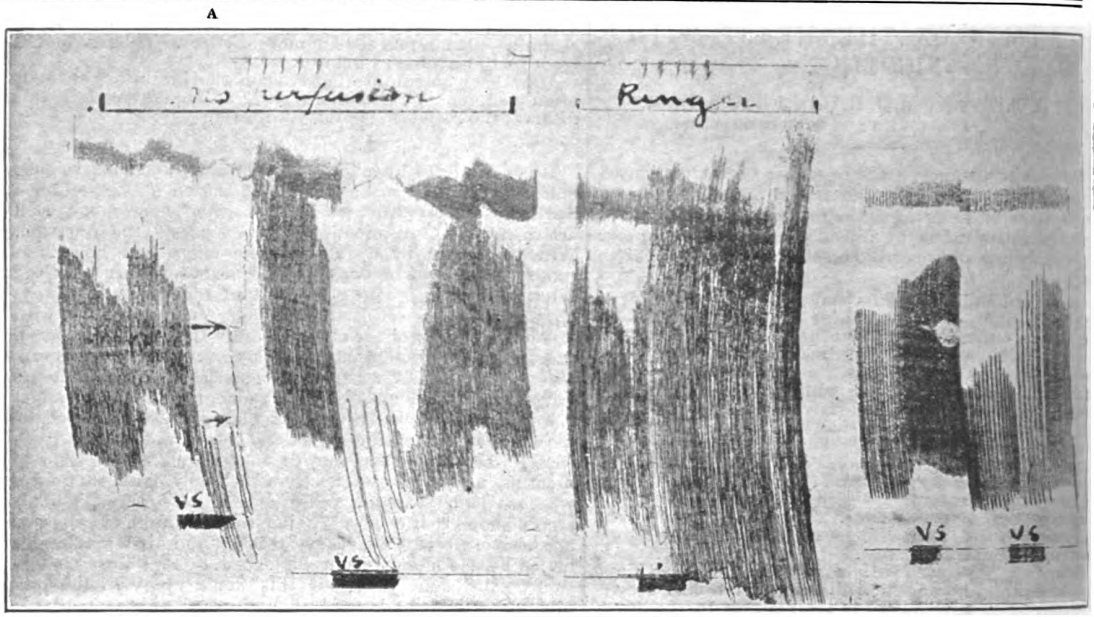


FIG. 1.—Effects of vago-symrathetic stimulation with and without simple perfusion. Slowing and loss of tone (first two signals) without perfusion. Augmentor effect with perfusion (third signal). The last two signals represent the same stimulus in recovery from nicotine.

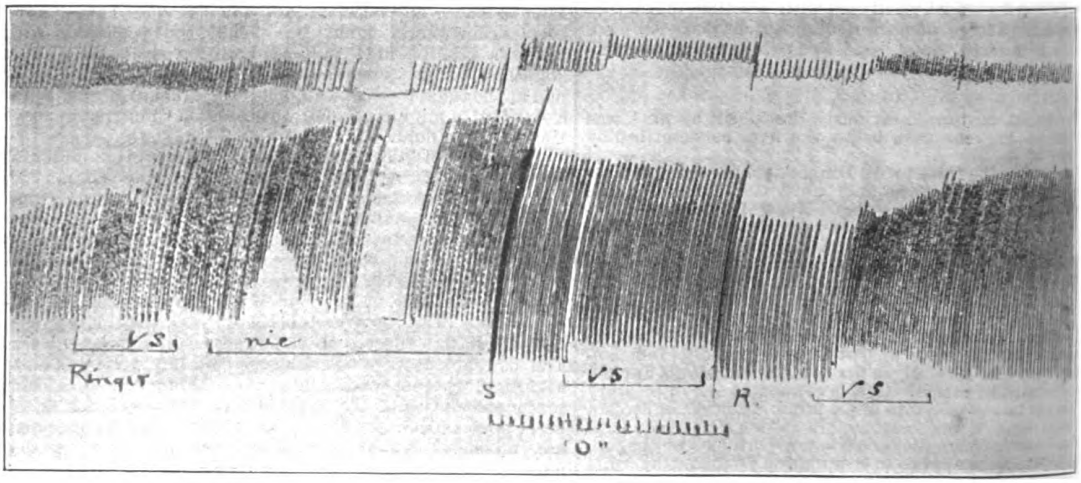


FIG. 2.—Vago-sympathetic stimuli (v.s.) causing acceleration before and after nicotine effect, but not during this.

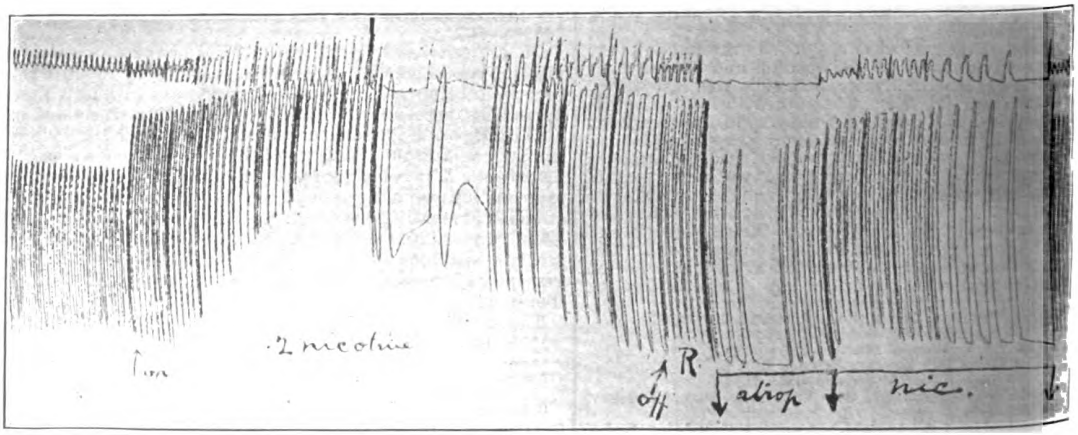


FIG. 3.—Effect of 0·2 per cent. nicotine before and after atropine. Strong atropine perfused about three minutes between arrows. Nicotine action as before, but less tonus.

continued action, it does not always show an improvement on its pre-nicotined state; but it frequently shows for a varying time a larger beat if the nicotine be replaced by Ringer's solution after the first minute, and in this phase it is capable of performing increased work, as referred to above and as dealt with later on.

A 0·2 per cent. solution acts similarly to the above, but with a more pronounced effect. The steps of the action resemble those described for 0·1 per cent. up to a certain point—that is to say, slowing and increased tone of the ventricle—and after a while a complete cessation of beat. (Fig. 3.) The time of onset of this arrest varies from one to four minutes, and its duration with continued nicotine perfusion is from one to three minutes.

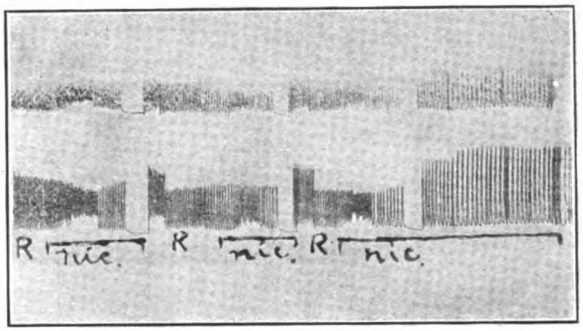


FIG. 4.—Three applications of 0·2 per cent. nicotine each after thorough Ringer washing at R. The accelerators are stimulated in each case. Drum stopped a few minutes at each break.

A. *Nerve.*

Acceleration before slowing is not invariable, but quite common with a 0·2 per cent. solution, and still more frequent with 0·5 per cent. If acceleration is observed once in a particular heart it occurs again and again in this with the same nicotine solution after a thorough washing out with Ringer's solution, and this consistency is also shown with the other phenomena, in degree, duration, time of onset, &c. (Fig. 4.) Three arrests of the beat by 0·2 nicotine are shown after a preliminary acceleration and slowing. The drum movement was stopped in each case soon after the beat ceased, and this was allowed to recover under the action of the alkaloid. Then a "step" of the recovered contractions to the mark R, where washing out took place. The strong contractions at the end occur under continued nicotine perfusion.

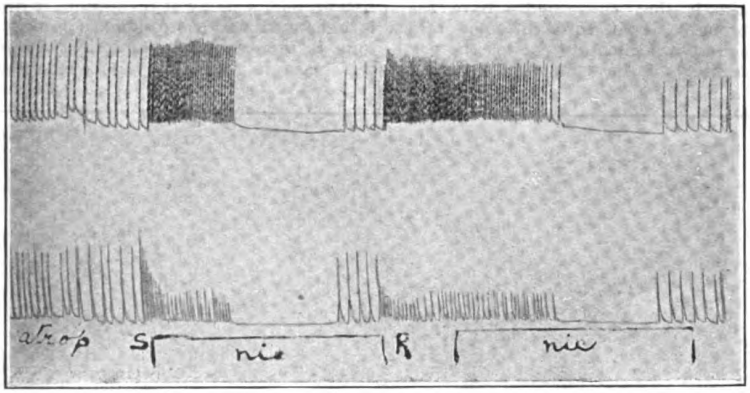


FIG. 5.—Irregular slow beat caused by strong atropine perfusion which ceased at S. Then 0·2 per cent nicotine stopped heart in two minutes. Same effect later when all atropine washed out (R).

Acceleration by nicotine has been noticed by other observers and has been attributed either to the presence of sympathetic cells in the heart (Cullis and Dixon [11]) or to its action on part of the neurone as well as on cell body (Dale and Laidlaw [12]). A preliminary acceleration by 0·2 per cent. of nicotine is shown by a large proportion of the records. This double action of nicotine is, I think, uniform in all the structures affected by it in the heart.

An endeavour will now be made to show that this is true for the other nerve elements and for muscle. The period of slowing follows that of acceleration, and is occasioned by an excitor effect on the inhibitory mechanism, as stated by many observers. But their explanation of the full continued effect of nicotine on this mechanism is not quite satisfactory in the light of the results about to be referred to.

If the inhibitory effect, slowing and cessation of beat for a time, is due entirely to action on ganglion cells or preganglionic vagus it should be abolished by something which could be relied upon to suppress vitality in these parts, such as atropine. It is said that they are paralysed in the heart by 0·001 mg. of this, and perfusion with atropine solutions representing this dose, administered in the course of a few minutes, was tried as a preliminary to nicotine action, but without effect. Stronger solutions of atropine were next tried, and not until 0·05 per cent. solution was reached was any appreciable antidotal effect noted, beyond lengthening the time of onset of slowing. With this and stronger solutions (yielding about 5 mg. per minute or more) there is a depressing action on muscle. (Fig. 5.) The result in all cases of atropine perfusion was that it never prevented the slowing caused by nicotine, though in strong solution it sometimes diminished the degree of slowing as well as prolonging the time necessary for its onset. This nicotine effect is very like the usual one, and

[11] Cullis and Dixon: Jour. of Physiol., 1911, xlii., 156.

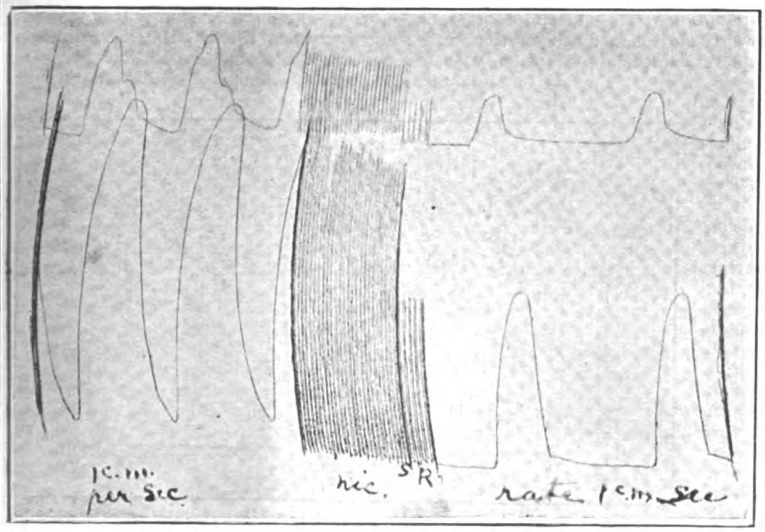


FIG. 6.—Augmentor effect with reversed beat. Normal beat at R.

[12] Dale and Laidlaw: Jour. of Physiol., 1910, xli., 1.

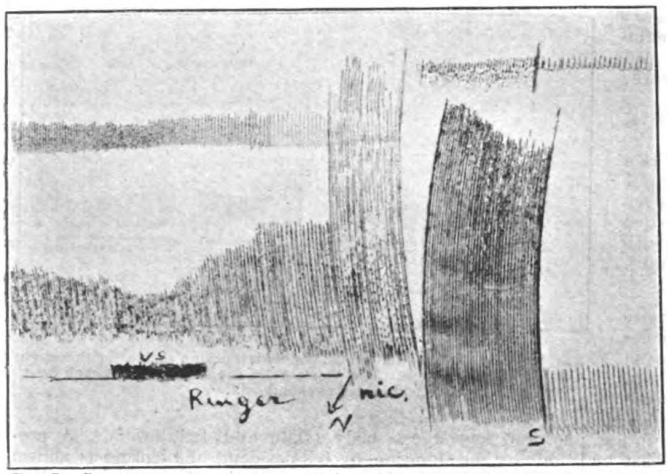


FIG. 7.—Great force of beat due to nicotine when applied after vago-sympathetic stimulation. Perfusion stopped half an hour at S.

the slowing, if we take it that the ganglia have been paralysed, must be brought about through some other channel. If, as has been shown, nicotine excites the post-ganglionic fibres (accelerator) of the sympathetic, there is no reason to suppose that the inhibitory post-ganglionic fibres are not also stimulated by it, whether we regard it as acting on nerve trunk proper or on receptive substance (Langley [13]).

Considering it well to leave no doubt of the failure of atropine to counteract nicotine slowing the former was perfused in still stronger solution, 0·1 per cent., until the muscle showed unmistakable signs of deterioration. These stronger solutions of atropine bring about a marked slowing of the heart and deterioration of the muscle metabolism, which is more marked in the ventricle, and augments this depressing effect of nicotine, but the slowing or stopping action of the latter is practically unaffected. (Figs. 3 and 5.) The latter shows a hypodynamic ventricle where perfusion with both drugs had been alternately performed for about an hour; a 0·2 per cent. nicotine stops the heart in about two minutes. This is again washed out at R, and again nicotine shows the same effect as previously. The depressing action can be intensified in the auricles by running a stout needle through them which establishes a leak, and this determines that the auricle muscle suffers most with low perfusion pressure. Nicotine in this case stops the heart as before, and it resumes with increased pressure (nicotine + Ringer).

The slight counteracting effect of atropine may be due to the fact that nicotine excites both ganglion cells and post-ganglionic fibres, whereas atropine does not affect the latter. The modified nicotine response given in some instances after large doses of atropine may be accounted for by supposing that in strong solution atropine depresses post-ganglionic fibres without completely abolishing irritability in them.

The purely augmentor fibres in the heart are also stimulated by nicotine, and this effect probably outlasts that on the other nerve elements. It is held in check or antagonised during the excited state of the inhibitory fibres, and if the latter condition is curtailed or prevented by turning on Ringer's solution before it is due to come on, the greatly increased force of the beat is seen. (Fig. 6.) It is also sometimes seen after the full effect of the nicotine solution, and may occur with a reversed rhythm—to be referred to directly. The record shows the reduction of the beat to normal after half an hour's delay at S (stationary drum). Augmentation is enhanced and more quickly brought out if sympathetic tone is increased by stimulation beforehand. (Fig. 7.) In this case it was the vago-sympathetic trunk that was stimulated (signal) during Ringer perfusion; this causes acceleration and some increased force. Half a minute's perfusion with 0·2 per cent. nicotine at N now gives a very pronounced augmentor effect. The levers being

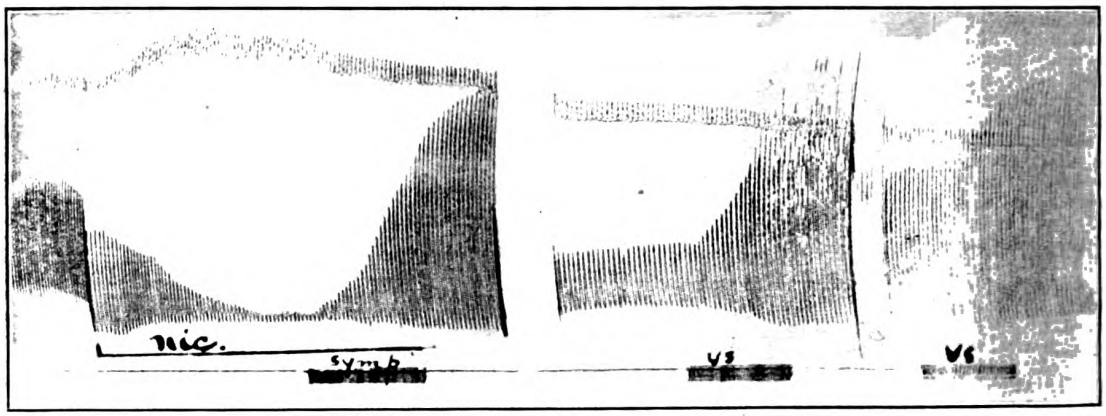


FIG. 8.—Failing ventricle in nicotine action restored by sympathetic stimulation; also strong augmentor effect of vago-sympathetic on ventricle. (Signals 2 and 3.)

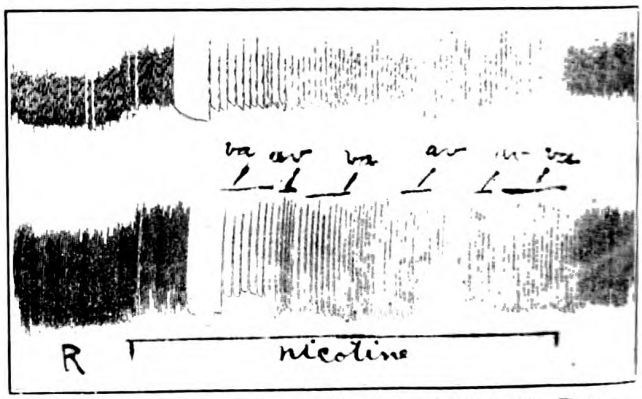


FIG. 9.—Alternation of A.V. and V A. rhythm during nicotine action. The auricle leads in the fast groups and the ventricle in slow portions.

[13] Langley: Jour. of Physiol., 1906, xxxiii., 374.

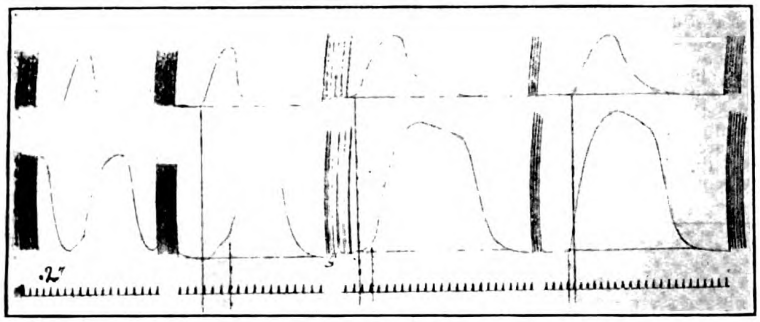


FIG. 10.—Reversal of rhythm by nicotine. The A.V. interval is seen to be shortened before the ventricle takes up the lead in the cycle.

half-rhythm, irregularity, &c. The effect of a failure of output by the ventricle is well shown by the auricular tension. The first signal represents stimulation of the sympathetic nerve. A few inches of the tracing which were without interest were cut out at the gap and the vago-sympathetic this time stimulated (second signal) some ten minutes after the sympathetic (the sympathetic stimulus was applied below the vagus ganglion; the vago-sympathetic stimulus to the trunk of the nerve high up). Again we have a pure augmentor effect which is repeated ten minutes later on (third signal). The effect is confined to the ventricle, and points to independent augmentor impulses to that chamber.

adjusted at the gap in the record, where a portion was cut out, a further step is shown, and finally the return to a low condition without perfusion which had been stopped for about half an hour at the point S. The inhibitory elements are, of course, stimulated by the electric current as well as the augmentor, but we may suppose from the result that the balance of increased tone is with the latter, and the nicotine effect on this is more marked than on the other.

This phase of nicotine action resembles rather the effect of adrenalin in the great size and force of beat than that of digitalis or veratrine. In it the rate may be fast—viz., 60 per minute—or comparatively slow, about 15 to 20 per minute. The accelerators are quickly stimulated (pure acceleration is often the first sign of the drug effect) and recover quickly from succeeding depression; they recover sooner than the inhibitors. (Fig. 1.) The last two signals (Fig. 1) show stimulation of the vago-sympathetic nerve with an interval of two minutes or less in recovery from perfusion with 0·2 per cent. nicotine. Acceleration in the first of these is shown changed to slowing and increased force in the second, but only in the ventricle. During the acceleration response the inhibitor elements were still in the depressed stage, but two minutes later they have recovered sufficiently, not only to prevent an accelerator effect, but to cause some inhibition at least in the ventricle.

The augmentor fibres may remain active when the accelerators seem to be out of action in continued perfusion, and even when the muscle metabolism shows marked signs of deterioration. (Fig. 8.) In the first part of the tracing the ventricle beat is falling off quickly, which is one way of showing its depressed metabolism; other ways in which this is shown are the alternating pulse,

So in this, after nearly an hour of perfusion with a 0·1 per cent. solution of nicotine, the augmentor fibres to the heart are still active. The period of depression in them supervenes sooner or later, as in the other elements. There may be a temporary depression which is quickly recovered from even under continued action of weak nicotine, or there may be no depression period with a weak solution until after prolonged action. As already shown, there is evidence of accelerator depression by 0·2 per cent. nicotine (Fig. 2), and it is evident that there is no augmentor effect of stimulation at this time either.

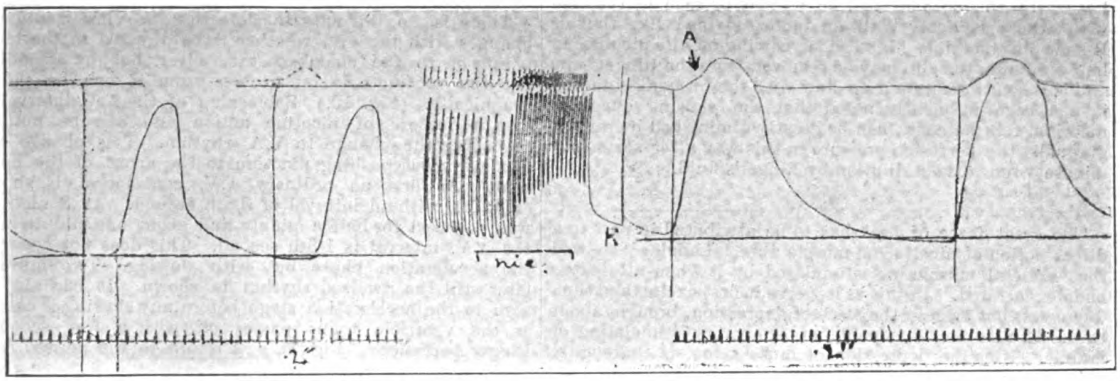


FIG. 11.—Reversed rhythm quickly established in accelerator phase of nicotine. Ringer solution was perfused for a few seconds to reduce tonus at R. A beat begins at arrow.

This greatly increased force of the beat suggested a test of the amount of work done by the heart and how far it might be increased by nicotine stimulation. The method adopted was a very simple one.

A glass tube 40 inches long, of about 4 mm. diameter, was drawn out to a cannula at one end, and this was inserted into the left aorta of the frog, while the right was tied off or clamped. The tube was then placed in a nearly vertical position and the fluid expelled by the ventricle mounted up its interior in a series of intermittent movements according to systoles. Testing the normal heart on Ringer's solution with a supply of 3·5 c.c. per minute, the fluid rose to a height

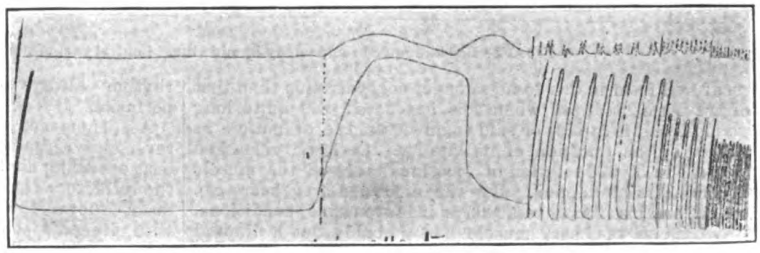


FIG. 12.—Double auricle beat in reversed rhythm. Description in text.

(vertical) of 20 inches on an average, beyond which the heart failed to send it. Lowering the perfusion bottle to relieve the auricular stress and to give the heart a rest did not alter the fluid in the tube, which was kept up by the aortic valve. On further trial no increased work was done, but now, after lowering the perfusion bottle to relieve once more, the Ringer's solution was shut off and 0·2 per cent. of nicotine solution turned on for half a minute with the same feed. As a result of this the heart-beats were much augmented and the fluid was soon driven higher, with greatly increased strokes, until it passed right over the top (vertical height over 30 inches). This result was obtained frequently.

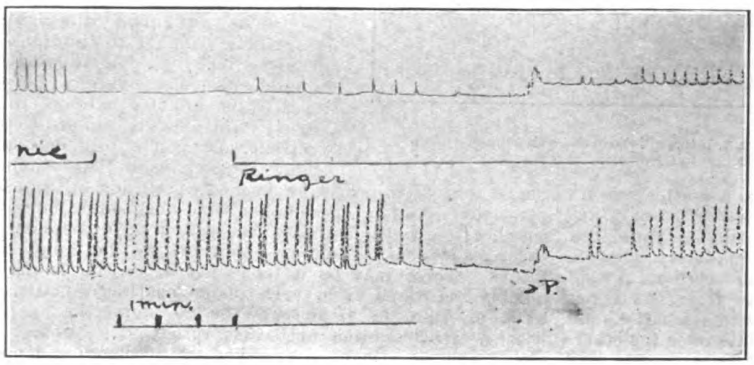


FIG. 13.—Independent ventricle rhythm. Recovering auricle causes extrasystoles. After four of these the independent contractions in ventricle suppressed.

A very high pressure is without ill effect on the heart after this dose of nicotine, as may be seen by the ease with which it deals with an increased feed like that of Ringer plus nicotine. Instead of cutting off the nicotine in half a minute, the clip may be removed from the Ringer tube and this solution allowed to flow with the former. Indeed, it has been frequently noted that the slowing effect of nicotine, 0·2 per cent., can be greatly diminished by raising gradually the perfusion pressure in this way after some half minute even without dilution by Ringer's fluid.

B. *Muscle.*

The great force of beat has to be attributed in part to a direct action of nicotine on muscle fibre. Langley[14] showed that skeletal muscle was stimulated by it when all nerves had degenerated. In this as in nerve it first excites and then depresses, but even in the state of depression, brought about by itself, nicotine is capable of temporary stimulation of muscle. Nicotine depression of muscle, too, is thoroughly

independence of nerve, and the stock runs down when nerve influence has been long removed.

Generally speaking, ventricular muscle is more susceptible to the influence of nicotine than auricular, and shows the first signs of defective metabolism, as well as the more marked response (tonus and increase of beat) to the exciting action. The auricles and ventricle sometimes recover from nicotine stop at different times, the auricles, for instance, resuming their beat some time before the ventricle. But we can determine a stronger action on the auricle by perforating as before mentioned, so that its muscle and nerves are more affected and the ventricle beats independently. In such a case the auricle beat when resumed nearly always follows the ventricle—that is, a reversed rhythm. This reversal, too, frequently occurs in recovery from nicotine stop without perforation of the auricles, and in the progress of recovery there is often a struggle between the two chambers for the lead. (Fig. 9.) The accelerated patches in the record are those where the rhythm is A.V., and the slower those of the V.A. sequence. At the change from the former to the latter an auricle beat is missed and sometimes two. With reversal, too, the auricle may cease to beat altogether for a time, while the ventricle beats alone. Reversal is more common when nicotine perfusion is kept up than when replaced during the stop by Ringer.

There is no difficulty in detecting the last-mentioned changes with the eye, whether it be directed to the lever points or to the chambers themselves, but by spreading out the contractions on a fast drum it can be shown graphically. (Fig. 10.) Shortening of the A.V. interval is also a feature of nicotine action and can be noticed preceding the change to V.A. rhythm. This change can occur without pushing nicotine to the arrest of the heart beat. At first an ordinary A.V. contraction is shown (Fig. 10) with an interval of 3/5th second. At S nicotine was perfused for half a minute and about one minute later the A.V. interval is 1/5th second. This does not occur in the acceleration phase but with slowing. Two minutes later still the reversed rhythm is shown. It can also be seen in the acceleration stage before any slowing is caused as the ventricle tonus passes off with a few seconds' Ringer perfusion. (Fig. 11.) A return to the normal A.V.

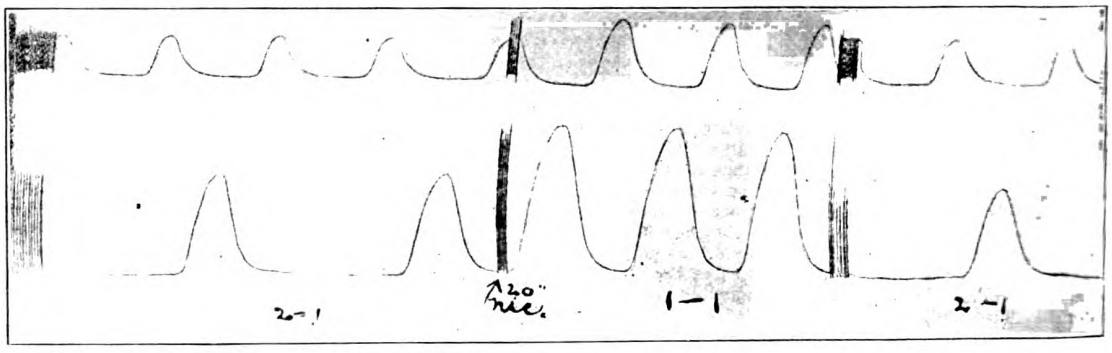


FIG. 14.—Block removed temporarily by nicotine. Central part of nicotine shows a 1:1 rhythm.

recovered from if due to no stronger concentration than that of 0·2 per cent., even when this has acted over quite long periods, and it cannot be said to affect the life of muscle as judged by the duration of its vitality. Carlson[15] remarked that a 1 in 50,000 solution of nicotine depressed the muscle of the heart of limulus. But the nicotined frog heart can go on beating for several days in favourable conditions. Rhythmicity of heart muscle has probably but a limited

rhythm always occurs with a few minutes' Ringer perfusion.

A phenomenon which has been frequently observed in this reversal is a double beat in the auricle (Fig. 12), the second beat occurring at the height of ventricular systole and during the refractory period of the latter. The fast movement of drum shows the beat first to be reversed. Perfusion with Ringer's solution for one minute does not alter the rhythm (it is still V.A.), but it changes the appearance of the auricle tracing. Two minutes' perfusion at the next stop

[14] Langley: Loc. cit.
[15] Carlson: Amer. Jour. of Physiol., 1906, xvii., 177.

gives the ordinary rhythm (A.V.). The significance of this double auricle beat is that the first is dependent on ventricular contraction which has been established as leading the cycle by some influence of the drug on its ordinarily subordinate mechanism. The higher mechanism, ordinarily predominant, is now recovering, and the second beat is an indication of this; the stimulus from this second beat falls during the long refractory period of the ventricle and fails to excite it. The condition is interesting from its bearing on de Boer's [16] work, who attributes to this long refractive phase the chief rôle in bringing about halved rhythm with veratrine, &c., while the view of Engelmann [17] and others is that the halved rhythm is caused by lowered conductivity from auricle to ventricle.

As a contrast to this we may examine another state where the ventricle is beating independently of the auricle, the latter being brought to a standstill, as already explained. (Fig. 13.) Here the recovery of the auricle takes place without reversal—that is, independently of the ventricle mechanism, which is not strong enough to determine it. The auricle beats, in this case occurring after the refractory phase of the ventricle, cause extrasystoles in the latter, until it takes up its normal secondary habit of following the auricle, as shown by the last two beats before the interval. The heart then ceased to beat, probably because the perfusion pressure was low; when this was raised at P the ordinary A.V. rhythm was established in a couple of minutes. The last of the extrasystoles is followed by a longer compensatory pause than the others, and during this the auricle assumes command, and this to the extent of stopping the ventricle with it when it ceases to beat. This group of auricle beats is characteristic of recovery when cessation has occurred in either chamber, isolated contractions taking place irregularly before ordinary rhythm is re-established. The last two ventricle beats before the stop are a continuation of the extra series, the automatic contractions being suppressed.

A halved rhythm can be temporarily changed to 1-1 by nicotine in lowered ventricle metabolism (Fig. 14), and this may be interpreted in many ways. The drug may increase the conductivity of the connecting muscle (dromotropic), and thus break down a block as it is generally understood, or it may increase the irritability of the ventricle (bathmotropic or inotropic), though the refractory period with larger beats would tend to increased length. The stimulus from the auricle, too, is stronger because of the stronger contraction.

That the second beat in the auricle may possibly be caused by closure of the electric change accompanying the ventricle contraction has to be considered, though the explanation given is the more likely one.

Reversal of the heart rhythm in the turtle has been caused by Laurens and Gault.[18] Conjoint stimulation of the vagus, which is separate from the sympathetic in the neck, and of the funnel connecting auricle and ventricle led to this V.A. beat. Stimulation of the sympathetic changed this back to the normal rhythm. There was no change of rate, but the force of auricular contraction was less.

In the nicotine reversal in the frog stimulation of the sympathetic seems to be without effect in converting to normal; it was certainly without immediate effect when tried in a few cases. We may suppose that the nicotine stimulation to predominance of the usually dependent mechanism of the ventricle is at least in part due to its stimulating action on ventricle sympathetic elements exceeding that on the auricle, while the inhibitory effect would be more potent in the latter. As already remarked, there is evidence of independence of action of ventricle augmentor elements. (Fig. 8.)

Schlomovitz and Chasé [19] tried to abolish the automaticity of the sino-auricular pacemaker in the turtle with nicotine and atropine, but did not succeed, and for this reason they concluded it was independent of nerve. There is no doubt, however, that nicotine causes a reversal of rhythm as here described. It has been seen many times.

As already stated, the A.V. interval is shortened in certain phases of nicotine action. If this interval is due to delayed conductivity of the contraction wave in the intermediate region then nicotine shortens it by increasing the conductivity. It is likely that the drug shortens the latent period of ventricular muscle, but this has not as yet been verified.

[16] De Boer: Quar. Jour. Exp. Physiol., x., 4, p. 383.
[17] Engelmann: Arch. für d. ges. Physiol., 1897, lxv., 108.
[18] Laurens and Gault: Proc. Soc. Exp. Biol. Med., 1916, xiii., 182.
[19] Schlomovitz and Chase: Amer. Jour. of Physiol., 1916 xli., 112.

Conclusions.

Nicotine in weak solution, 0·1 and 0·2 per cent., which has been neutralised, perfused through the hearts of frogs gives results which are fairly uniform, though certain variations occur.

The first effect in a majority of instances is pure acceleration of the beat which is usually seen in less than half a minute from the introduction of the drug. This gives way to slowing, a phase in which increased force of the contractions is also seen. When acceleration is not in evidence increased force is usually exhibited alone within the first half a minute, or both may occur together. The stimulation of accelerator fibres is soon followed by depression, and this double action is believed to be true of nicotine on the different elements responding to it.

Slowing of the beat leads to a definite stop lasting one or a few minutes, but this is not common with solutions of less than 0·2 per cent. After a period of quiescence the heart resumes its beat with a rhythm which may be irregular or regular, the amplitude of contraction being usually greater than before. The contractions are now often reversed—viz., apex to base sequence, and this is more common after stronger solutions of nicotine, 0·5 to 1 per cent.

With 0·5 to 1 per cent. solutions cessation of beat occurs sooner than with weaker solutions, and lasts longer. With a solution of less than 1 per cent. it resumes beating spontaneously after arrest, with nicotine perfusion kept up, though this is not always so.

The slowing of the beat and arrest for a while is due to stimulation of the vagus endings. The failure of atropine to counteract this points to stimulation of post-ganglionic fibres. This resembles its effect on the sympathetic side causing acceleration.

The augmentor fibres are also stimulated by nicotine, and the succeeding depression is short-lived or may be much delayed. Evidence is given of their activity in certain stages of nicotine effect, when inhibitor and purely accelerator factors seem to be suppressed. The activity of augmentor fibres to the ventricle seems to be possessed of a certain degree of independence, in consequence of which they may constitute the chief factor in independent ventricular rhythm.

The work done by the heart can be increased by nicotine stimulation. This is in part nervous and in part muscular in origin.

The delay in the passage of the contraction wave from auricles to ventricle is reduced by nicotine, in some instances independently of acceleration, and is frequently seen to lead to a reversed rhythm. The usually subordinate ventricle mechanism is stimulated to predominance in the cycle.

Though all of the phenomena mentioned have been observed many times, the only one which may be said to be unfailing in its appearance is slowing and arrest of the beat in proportion to the strength of nicotine used. Very strong doses of atropine do not abolish this.

Cork.

THE LATE MR. FREDERICK E. FENTON.—Mr. Fenton, who died at his residence, Uxbridge-road, Ealing, on Oct. 16th, aged 64, was born in Chelsea, and received his medical education at St. George's Hospital and in Paris. He qualified in 1878, and later took the Fellowship of the Royal College of Surgeons and the Membership of the Royal College of Physicians of Edinburgh. He commenced practice in Ealing at a time when that place still retained some of the characteristics of a Middlesex village in the neighbourhood of London. By his all-round ability he soon gained for himself a good position professionally and the esteem of his neighbours. He was prominently associated with the Cottage Hospital at Ealing, and later became surgeon to the Western Skin Hospital and to the King Edward Memorial Hospital at Ealing, being later appointed consulting surgeon. Among his other active interests was that of the Volunteer movement, and he served in the Queen Victoria Rifles for 22 years, retiring with the rank of Surgeon Lieutenant-Colonel, with the Volunteer Decoration. A good French scholar, he translated from the French M. Duval's "Artistic Anatomy." He leaves a widow, a daughter, and a son, who is a member of the medical profession.

WAR EMERGENCY FORMULAS:

AN ADDENDUM TO THE BRITISH PHARMACEUTICAL CODEX 1911.

IN this new addendum are contained temporary formulas for preparations which normally contain sugar or glycerine or both. The substitutes are generally either :

(1) Syrupus factitius, consisting of

Tragacanth in powder ...	0·7	Distilled water... ...	to 100·0
Chloroform	0·5		

or (2) Diluted glucose, consisting of

Glucose	90·0	Distilled water	10·0

Preparations formerly containing sugar.—It will be useful to note the directions for preparing some of the more commonly prescribed sugar compounds. Confection of senna contains 45 grammes of glucose in the place of 40 grammes of sugar ; confection of sulphur is made with syrup substitute and orange flower water ; aromatic elixir is made with diluted glucose and the same applies to elixir of orange ; in cod-liver oil emulsion the sugar is merely omitted ; in compound mixture of chloroform syrup substitute is used in place of syrup ; from guaiacum mixture sugar is omitted ; compound powder of almonds contains no sugar ; in compound liquorice powder, maize or rice starch is used in the place of sugar ; there is no sugar in compound powder of tragacanth ; in syrup of hydriodic acid syrup substitute is used, as also in the case of the following syrups : Aromatic, orange, orange flowers, lemon, rhubarb, squill, tolu, urginea, and ginger ; in syrup of senna a variation of syrup substitute is used.

Preparations formerly containing glycerine.—Turning to the preparations containing glycerine, there are several points worthy of note. The following is the formula for glycerine of carbolic acid : —

Phenol	5·0	Chloroform	0·5
Tragacanth	0·7	Distilled water ...	to 100·0

This preparation is less viscous and more readily absorbed than that made with glycerine, and therefore the strength has been diminished. The formula for glycerine of tannic acid is as follows :—

Acid tannic	10·0	Alcohol	2·0
Tragacanth	1·2	Distilled water ...	to 100·0
Chloroform	0·5		

Here again the strength has been diminished on account of the more rapid absorption of the new preparation. Glycerine of alum is made with sugar substitute and the strength has been diminished. The formula for glycerine of starch is as follows :—

Potato starch	5·0	Alcohol	2·0
Tragacanth	0·5	Boric acid lotion B.P.C.	95·0

Glycerine of borax is composed of tragacanth, chloroform, and boric acid lotion. In compound glycerine of glycerophosphates distilled water is used instead of glycerine, and the same device has been adopted in the case of compound glycerine of thymol. In glycerine of pepsin the following is the formula :—

Pepsin	10·00	Distilled water	22·50
Hydrochloric acid ...	1·15	Alcohol (20 per cent.) to	100·00

Glycerine is omitted from the following preparations : Liniment of potassium iodide with soap, compound solution of borax, calamine lotion, quinine lotion, liquor pepticus, sulphur lotion, borax and honey, compound bromide mixture, butyl chloral hydrate mixture, compound pepsin mixture, compound spirit of camphor, tincture of kino, tincture of wild cherry, pepsin wine, iodine ointment, and resorcin ointment. In compound tincture of cardamoms, compound tincture of rhubarb, and compound tincture of senna the glycerine is omitted and a larger proportion of alcohol used.

CENTENARIAN.—Mrs. Sarah Gardiner, who lives at Evelyn Villa, Holly Walk, Leamington Spa, is, a correspondent informs us, 105 years of age.

Correspondence.

"Audi alteram partem."

THE USE OF FLAVINE ANTISEPTICS IN WOUNDS.

To the Editor of THE LANCET.

SIR,—The work on the treatment with acriflavine and proflavine of recently inflicted war wounds, by Captain H. Drummond and Major J. W. McNee, along with Captain L. Colledge, Captain A. F. Sladden, Captain J. E. McCartney, and Lieutenant R. T. Worthington, under the auspices of Surgeon-General Sir Anthony Bowlby constitutes a valuable contribution on the employment of flavine antiseptics under conditions of trial not hitherto recorded. When our original communications were published flavine antiseptics had been extensively tested in this country, but, necessarily, the type of early case investigated by Drummond and McNee was not available here, and while the "prophylactic" use of flavine had been undertaken by one of us [2] in hospital practice, and by Thornton, along with Leeming Walker [3] in the outpatient department, recent injuries of the extent and gravity of those met with in the war zone had not been treated. The results obtained here, however, were of so encouraging a nature as to justify us in the statement that "it is not too much to hope that even in severe cases of injury, with extensive and highly contaminated wounds, the onset of the phenomena of sepsis and anaerobe infection may be aborted to a great extent, provided that energetic treatment is begun at the earliest possible moment." Drummond and McNee have attained a degree of success in this direction by the use of flavine, which, as compared with other methods in present use, seems to leave little to be desired by the most exacting. We are aware that it may be claimed that nothing more has been achieved than was possible by means of the Listerian technique, employing carbolic acid ; but it is notorious that the world of surgery as a whole had not realised the Listerian ideal in preventing septic manifestations in contaminated wounds with a degree of constancy sufficiently high to render the finding of further antiseptics a work of supererogation. The results of Drummond and McNee have, of course, been obtained by radical preliminary surgical treatment, the necessity for which in all cases has been repeatedly emphasised by us when suggesting the use of flavine ; for it is inconceivable that any measure, short of removal, will effectually overcome a focus of infection situated in a mass of necrotic tissue. It is highly satisfactory to note the conclusion arrived at by Drummond and McNee, that "the primary dressing (i.e., gauze packing soaked in 1 : 1000 flavine solution) need not be changed for two or three days and is then easily and painlessly removed." As these observers remark, an important point is that "this may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds." It seems that the simplicity and effectiveness of the procedure must be ascribed to the remarkable property of the flavine antiseptics whereby they continue to act in the serous wound-exudate, thus obviating necessity for the immediate installation of the so-called Carrel's tubes, and the maintenance of what Dakin and his American collaborators [4] have recently characterised as a "complicated hydraulic system." It need scarcely be emphasised that the gain to the comfort of the patient at this serious stage, in addition to the value in medical organisation, is immense, considering that, after the primary dressing, his wound does not require to be disturbed for so considerable an interval. It is most striking that in open wounds treated in the pre-suppurative stage, where the course of events can be observed, on the third day after infliction, when the primary flavine dressing is removed, "all signs of inflammation are wanting and there is no pain, redness, swelling, or induration in the tissues around. The secretion from the wound is

[1] THE LANCET, Oct. 27th and Nov. 3rd.
[2] Ligat : Brit. Med. Jour., Jan. 20th, 1917.
[3] Browning, Gulbransen, Kennaway, and Thornton : Ibid.
[4] Dakin, Lee, Sweet, Hendrix, and Le Conte : Jour. Amer. Med Assocn., vol. lxix., p. 27, 1917 ; see also Sweet, Ibid., p. 1076.

minimal in amount and suppuration is absent." Thus, it appears that a simple flavine packing, subsequent to necessary operative procedure, has enabled the dangerous period of the first few days to be safely passed without the occurrence of gas gangrene or spreading pyogenic invasion of the tissues. As regards the subsequent course of events in such cases, two most interesting observations have been recorded by Drummond and McNee—first, "that in the great majority of the wounds no sterilisation in the bacteriological sense was brought about by the application of flavine. The wounds tended to pass through, as regards their bacterial flora, the stages now well recognised in wounds of this war." In his comment on this point Sir Anthony Bowlby remarks: "In spite of the presence of bacteria, there is a notable absence of inflammation and of septic infections"; and it is most important to notice that not merely are the local phenomena absent, but also the severe constitutional evidences of septic infection are awanting. Thus, it is not merely a question of flavine having masked the action of the organisms in the wound, but, judging from the results, *the organisms have actually been deprived of their virulence and pathogenic properties by the presence of flavine.* As Drummond and McNee remark, there exists "the fundamental difference between what may be termed 'surgically sterile' as distinct from 'bacteriologically sterile' wounds. Complete bacteriological sterility was rarely obtained, yet the patients were obviously doing well, and the wounds showed no signs of local or spreading inflammation. In several instances secondary suture was adopted with complete success, while numbers of organisms were still recognisable in the field of the microscope. Cultures, moreover, showed that these organisms were still viable." It seems to us that this quotation illustrates the valuable results likely to be obtained from the balanced collaboration of the clinic and the laboratory. Implicit reliance on precedent would here have led to erroneous conclusions as to the suitability of such wounds for suture, and it is likely that they would have been condemned on the basis of "bacterial charts." As we had previously remarked,[5] "there is no proof that the standards established in connexion with hypochlorite solutions will apply precisely to wounds treated with other antiseptics. Information on this point in connexion with flavine compounds and other substances must be interpreted without bias derived from a knowledge of the significance of the findings under the particular conditions studied by Carrel." Major Carslaw's[6] conclusion, in an independent series of cases, is in complete agreement with Drummond and McNee on this question of the lack of significance attaching to the exclusively bacteriological criterion of progress in the wounds. As regards the existence of certain types of *B. coli* which are relatively resistant to flavine, we have been able to verify this fact; but it must be noted that all coliform types do not present this resistance, and the common *B. coli* is not highly resistant. The second point is that open wounds under continuous treatment with flavine from the presuppurative stage onward, "tend to assume a stagnant condition, during which the processes of repair are almost in abeyance." We have, of course, never had an opportunity of following large open wounds treated in this manner from the earliest stage and we accept without reserve these highly important observations of Drummond and McNee. An examination of their histological data shows that when flavine solution is applied to *freshly exposed* tissues there is very little in the nature of a reparative tissue-reaction; the surface of the wound becomes covered with a fibrinous membrane and the condition remains practically *in statu quo:* at the same time, it must be again emphasised that, in spite of this, the net result of the flavine treatment is to prevent any tendency to the development of the phenomena of local or general infection. The "narrow zone" of necrosed muscle fibre in the floor of the wound can scarcely be attributed to a deleterious action of flavine on the tissues, since the same appearance is met with in a recent "aseptic" operative surgical incision closed by sutures, nor do Drummond and McNee attribute the microscopic necrosis to the flavine. Their histological picture seems to be a most satisfactory confirmation of our original statement as to the harmlessness of flavine when applied to the vegetative tissues. As to the inhibition of reparative reaction, we have never had the chance of making observations under the conditions now investigated, but we heartily endorse the conclusion that, in these circumstances, "it is obviously improper treatment to continue the application of flavine until such a stage is reached." As regards later treatment in those cases where suture is impracticable, as in large superficial wounds, we would suggest that the possibilities of effective intervention are not exhausted by the application of eusol, which, however, owing to the solvent action of hypochlorites, affords a useful means of removing the fibrinous membrane. The use of brilliant green at this stage would be most interesting; observations have suggested that it causes exuberant growth of well-vascularised granulation tissue and that the effect can be regulated according to the concentration employed; this would be a most valuable condition for further trial.

A further point to which we would especially draw attention is the misinterpretation which is likely to be attached to Drummond and McNee's conclusion that "flavine cannot be classed as a success in the treatment of the *later* stages of war wounds"; this unqualified statement, apart from the context, is liable to cause grave misunderstanding. It is obvious that *the authors are here referring solely to their experience with cases treated continuously from the presuppurative stage onward with flavine.* The majority of wounds which reach this country have not been so treated, and it is probably the rule for war wounds as they reach home hospitals to be in a state of suppuration. Now the majority of the original tests were made in such suppurating cases, and the opinion regarding the highly beneficial action of flavine as a therapeutic antiseptic was arrived at by one of us (Ligat) owing to observations under such conditions. In contrast to Drummond and McNee's observations on cases treated *ab initio* with flavine, it is noteworthy that where flavine treatment was *begun in the later stages* the formation of pink healthy granulation tissue and the ingrowth of epithelium appeared much accelerated—a point which is confirmed by Carslaw's[6] observations on wounds treated with flavine after the onset of suppuration. This happened concomitantly with the diminution of suppuration, which had often persisted for long periods in spite of other accepted forms of treatment—brilliant green led to similar results, although it appeared not quite so effective when applied in similar fashion. Carslaw has also drawn attention to the effect of flavine in putting an end to suppuration in cases which had long failed to respond to a variety of therapeutic agencies.

With regard to the question of mode of application, it is to be noted that intimate contact of the antiseptic with the tissues must be secured; no known antiseptic will act at a distance, and also the antiseptic present must be available; hence gauze soaking with flavine solution should be used for packing. The latter caution has been added because it has come to our notice that some surgeons have considered that they were applying flavine treatment when they introduced into the wound gauze wrung as tightly as possible from the solution; no doubt this was a beneficial procedure in the case of the harmful, older antiseptics, but it is not an effective method of applying flavine! We would also draw attention to the method of efficient application by a tube with valved outlet devised by Mr. T. H. Kellock.[7] This matter of the necessity for intimate contact of the antiseptic with the infected tissue cannot be over-emphasised; contact is comparatively easily attained in the case of open surfaces and is difficult to secure in deep wounds—e.g., compound fractures, and in consequence of this beneficial effects may appear less marked in such cases. It would be ignorance or disregard of the significance of this point, however, which would prompt a statement to the effect that a substance acted well on surface wounds, but was incapable of acting in deep ones; this would mean nothing more than that the mechanical procedures were defective in securing contact in the depths.

The observations as to the promotion of healing brought about by flavine in suppurating wounds, in which granulation tissue is already present, have been confirmed by Carslaw[6] and others and do not stand in any contradiction to those of Drummond and McNee. Obviously the formation of granulations from the vegetative tissues is one process and the active proliferation of granulation tissue which has once

[5] Browning, Gulbransen, and Thornton: Brit. Med. Jour., July 21st, 1917.

[6] Carslaw: R.A.M.C. Jour., vol. xix., p. 488, 1917.

[7] Kellock: THE LANCET, 1917, ii., p. 348.

been formed is another; as to epithelial ingrowth, it is notably influenced by the relationships of the granulation tissue. As regards the formation of the pellicle in wounds coming under flavine treatment when already in the suppurating stage, some observers appear to be more familiar with this phenomenon than others and the differences in method of use which determine varying results require further elucidation.

So far as our own observations are concerned and in the light of Drummond and McNee's and Carslaw's work, the importance of which rests both on the valuable therapeutic results obtained and also on the evidence of scientific attitude in seeking an appropriate clinical application for laboratory results, we feel that what we had anticipated for flavine antiseptics, and perhaps even more, is likely to be realised. It has not been suggested that from start to finish of any infected wound flavine ought to be applied continuously, and Drummond and McNee's work on wounds in the presuppurative stage, as well as Carslaw's observations on those already suppurating, afford a clear proof of the suggestion which we made, that the most valuable effects of flavine antiseptics are to be obtained in the first few days of application, and that later on, after serious infective processes have been prevented or overcome, it is advisable to intermit their use or to substitute some other compound—thus, to prevent the appearance of sepsis and to control it when established are results which flavine antiseptics undoubtedly have shown themselves capable of accomplishing, with a very great measure of success, by comparatively simple procedures. Now that these important general points have been demonstrated by several independent series of observers, and that the broad lines of suitable application have been established, the way seems clear for further detailed work, which will also lead to the elaboration of methods for advantageously utilising the properties of these substances in other departments of surgery.

In conclusion, it may be added that in view of the preference shown by many surgeons for the use of antiseptics in the form of oily pastes, a procedure the rationale of which—apart perhaps from its "depôt" effect and its use in long narrow sinuses—is probably not yet fully understood, we hope that proflavine will soon be available in this form, e.g., as a fatty acid compound (oleate, &c.) which will be dissolved in oils and paraffins, or homogeneously mixed with these substances.

We are, Sir, yours faithfully,

C. H. BROWNING.
DAVID LIGAT

The Middlesex Hospital, Nov. 6th, 1917.

SPIRAL FIELDS OF VISION IN HYSTERIA, MALINGERING, AND NEURASTHENIA.

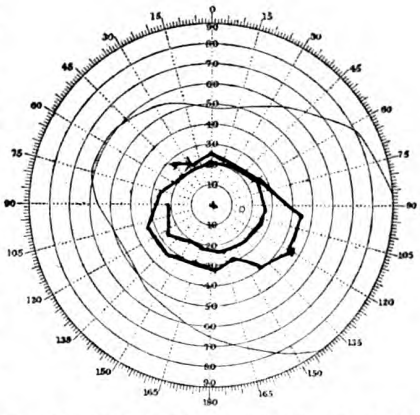
To the Editor of THE LANCET.

SIR,—In your issue of Oct. 20th Mr. W. M. Beaumont upholds the opinion expressed in Jones and Llewellyn's "Malingering, or the Simulation of Disease," that spiral fields of vision are characteristic of neurasthenia, in opposition to the view usually taught and quoted in your review of their book (THE LANCET, August 4th) that spiral fields are characteristic of hysteria. I am convinced that neither view is strictly accurate, as both narrow and spiral fields of vision are invariably the result of unconscious suggestion on the part of the observer. They are often produced in patients with hysterical symptoms, because, as Mr. Beaumont points out, such patients are generally abnormally suggestible, and they may be produced in neurasthenic patients, because they are abnormally easily fatigued and often abnormally suggestible in consequence, thus explaining the frequent association of hysterical symptoms with neurasthenia. Conclusive evidence of this view is brought forward by Morax, a distinguished French ophthalmologist, and formerly an assistant of Charcot, who was the first to describe these so-called ocular stigmata of hysteria. A true disciple of his great master, he continued for several years to find a narrow or spiral field of vision in all the hysterical cases he saw. But over 20 years ago he became a convert to Babinski's view that all the so-called hysterical stigmata are due to suggestion by the observer, and from that day he has not seen a single case of a narrowed or spiral field of vision. Babinski, who, as chef de clinique, had watched the development of Charcot's views on hysteria, soon felt himself forced to reject them, as he never found the so-called stigmata in any of a series of 100 consecutive cases of hysteria, which he examined in great detail by methods which excluded the possibility of suggestion. Morax adopted new methods to replace the perimeter, which it is practically impossible to use without at the same time suggesting a narrow field of vision, although, of course, the suggestion only takes effect in abnormally suggestible individuals.

In a small way my own experience has been identical with that of Babinski and Morax. I was in charge of the Neurological Department at Guy's Hospital for a year before I visited Babinski's clinique at La Pitié, and a week rarely passed in which I did not demonstrate one or more hysterical cases in which I had found hemi-anæsthesia and a narrow or spiral field of vision. In the nine years which have passed since then I have seen hysterical hemi-anæsthesia only once and I have never seen a narrow or spiral field of vision in a patient in whom these symptoms had not been looked for before he came to me, and my experience has not altered during the past 15 months, in which I have had several hundred soldiers with hysterical symptoms under my care.

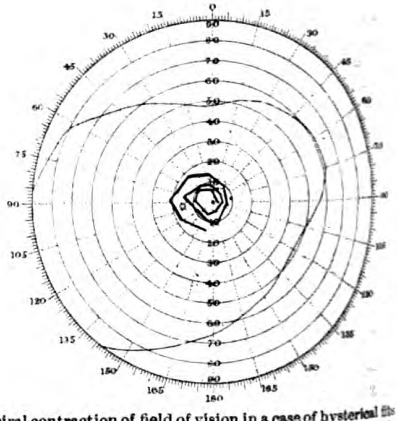
I recently examined 17 healthy medical students who had not yet been in the wards or read any medicine, after asking them to pretend to the best of their ability that they were paralysed in the right arm and leg. On being pressed whether they complained of anything besides paralysis not one mentioned any disturbance of vision, but in answer to a leading question four said they saw less well in the right eye than in the left. Each of the four stated that it was a general deficiency of vision, and said nothing to indicate that he meant a narrow field of vision. Their fields were then examined by the apparently rough finger method, which has, however, the great advantage of suggesting nothing, and no abnormality was found. They were then examined with the perimeter in the ordinary way: in each case a typical narrow field of vision was found in the right eye and in one case in the left, but to a much less degree. In the only two cases in which it occurred to

FIG. 1.



Spiral contraction of field of vision in a case of admitted malingering.

FIG. 2.



Spiral contraction of field of vision in a case of hysterical film without visual symptoms, in which the finger method used before the perimeter, showed a normal field.

me to continue the investigation after the first field had been marked out a spiral was obtained (Fig. 1) which was identical with that supposed to be characteristic of hysteria (Fig. 2). I expect that the reason why a spiral field of vision, which is the natural result of continued suggestion, has not been found in a larger proportion of hysterical cases showing a narrow field of vision is simply because it has not been looked for, the examiner being content when he has marked the limit of vision a single time in each direction.

Captain J. L. M. Symns and I have found in several cases of hysteria that an outward spiral was always obtained instead of an inward one if the white disc of the perimeter was moved outwards instead of inwards, as is commonly done. This proves conclusively that the ordinary inward spiral is the result of suggestion and not of fatigue.

In malingering some symptoms are produced voluntarily by the individual on his own initiative and others are produced voluntarily after being prompted by suggestions made unconsciously by the observer. The same two processes occur in hysteria, with the difference that they are involuntary, the symptoms being produced subconsciously, some by auto-suggestion and others by suggestions made by the observer. It is thus quite impossible to diagnose hysteria from malingering by a study of the symptoms alone.

I am, Sir, yours faithfully,

Netley, Oct. 21st, 1917. ARTHUR F. HURST.

THE FUTURE OF THE POOR-LAW.

To the Editor of THE LANCET.

SIR,—It is time for those who wish to continue as Poor-law medical officers to wake up. There is a proposition which many are wanting to see acted on—viz., that the Poor-law service should become part of, and merged into, the present and future general insurance scheme. The majority (about 2 to 1) of the members of the Poor-law Medical Officers' Association do disapprove of any alteration. It would help if all Poor-law medical officers would send me each their opinion and wish in as few decisive words as possible. I could then tabulate them and find the wish of the majority and make the conclusion known in THE LANCET and *British Medical Journal*.

There is a promise of compensation for vested interests if lost by change of Act of Parliament, but the compensation is never equal to the office and money lost. It may be a compensation, but not an absolute *quid pro quo*. It is not right that those who have no personal interests should decide for those whose actual living and other details of work centre round a Poor-law appointment. It is easy to look down from a higher perch and wish to brush special departmental appointments into the general hubbub. This is just what a State service commandant would like to do. I say again that the future of the Poor-law will be influenced by the amount of resistance offered by its medical and civil officers.

I am, Sir, yours faithfully,

A. WITHERS GREEN,
Honorary Secretary, Poor-law Medical Officers' Association.

Wardrobe-place, E.C. 4, Nov. 2nd, 1917.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

SIR,—Dr. J. F. Gemmel writes with feeling on this subject in your issue of Oct. 20th. I myself have an intense admiration and deep sympathy for our insane sailors and soldiers. So much so that when the Board of Control circularised asylum committees I advised our committee to suggest just such a project as Dr. Gemmel's. The Board of Control replied that such a project was not feasible for two reasons (if I remember correctly). The first was that the mental invalids would be out of reach of their friends, and the second that the numbers affected would be too great. I have always found the Board deeply interested in the welfare of the insane.

The points for consideration seem to me to be as follows:—1. To erect an asylum for these so-called "service patients" is to erect a monument to them. The public would call it the "soldiers' asylum." The stigma would remain and be magnified. The same result would follow if we kept an already-erected asylum for them. 2. Removal from War Office influence, from all reminders of war, would be beneficial. This can be better done as the Board of Control suggests. 3. Documentary evidence, or the want of it, will not make these patients either more or less insane. And certification is protection. Certified patients are protected by the Board of Control. 4. From the point of view of the patients' friends the patients are best in the nearest asylum to them (and this can always be arranged under existing circumstances), and in the nearest cemetery after death. 5. Amongst my cases those patients in whom sufficient intelligence remains have preferred to go near their friends. 6. The term pauper is a misnomer. Many, I should say the majority of patients, in so-called "pauper asylums" are not paupers. Furthermore, most of them come from the same class as the majority of our sailors and soldiers. These will not feel their position as patients but merely as *insane* patients. 7. The allowance of 3*s*. 9*d*. above the maintenance rate is not all: 2*s*. 6*d*. is allowed for extra comforts and should be made use of. Perhaps even this is not enough, but no doubt time will tell and more may be granted.

I consider that *every* patient who has been in the Army or Navy honestly should be classed as a "Service patient." They did their best and broke down. All honour to them! Much can be done for them. Where there are many special wards can be allocated to them. Special privileges can be granted to them. Special kindness can be shown to them. If the letter of my old colleague Dr. Gemmel encourages other superintendents to do their very best for insane sailors and soldiers it will not have been written in vain.

I am, Sir, yours faithfully,

W. J. A. ERSKINE.

County Asylum, Newport, I.W., Nov. 2nd, 1917.

THE VESTIBULAR TESTS AND FUNCTIONAL DEAFNESS.

To the Editor of THE LANCET.

SIR,—I think that if Dr. P. McBride were to carry out the vestibular tests regularly in cases of perceptive deafness their scepticism as to their general usefulness as aids in the diagnosis of functional deafness might become modified. It is now about five years since I first drew attention to the interesting and still unexplained fact that the vestibular sense-organ seems to become impaired in harmony with the degree of severity of the cochlear disease in cases showing perceptive deafness due to organic disease. This phenomenon appears, as Dr. McBride says, even in cases of noise-deafness. On the other hand, I have shown, and I believe that the observation has been generally confirmed, that in functional nerve-deafness, whether due to hysteria or neurasthenia, the vestibular reactions are as lively as, or even more lively than, the normal.

To these broad general statements there are, no doubt, exceptions to be made, and if any of your correspondents are interested in the subject I refer them to the Proceedings of the Otological Section of the Royal Society of Medicine, and more particularly to the discussion on nystagmus (jointly with the Ophthalmological and Neurological Sections), where I had an opportunity of expressing views on the subject which subsequent experience has not materially modified.

I am, Sir, yours faithfully,

Nov. 6th, 1917. DAN MCKENZIE.

References.—Proceeds. Roy. Soc. Med., Otolog. Sect., vol. iii., p. 74, vol. v., p. 18; and Joint Discussion on Nystagmus, Feb. 26th, 1914.

THE SOURCE OF SPIROCHÆTES IN URINE.

To the Editor of THE LANCET.

SIR,—As one among others who have recently been engaged with the investigation of trench fever, I wish to make one or two criticisms of the paper by Captain A. T. Nankivell and Captain C. E. Sundell in your columns, containing their observations of spirochætes in the urine in cases of this disease. In the first place I should like to ask them whether in any of their cases they have ever found spirochætes of the type which they describe in a specimen of urine collected by catheter. Again I notice that in only one of their positive cases was the smegma examined for spirochætes, none being found. I have not seen, nor have I met anyone who has seen, this type of spirochæte in a catheter specimen of urine. On the other hand, in a case of my own—a recruit who

had never been in France before and was admitted to hospital with bronchitis a week after landing in this country, whose urine was examined as a control—numerous spirochætes were found in a specimen collected in the ordinary way after cleansing the glans penis with antiseptic lotion, no other organisms being found on the slide. In a catheter specimen taken at the same time careful search revealed no spirochætes, but in smears made from the prepuce and meatus urethræ many spirochætes of the type under discussion were seen, together with other organisms.

If Captain Nankivell and Captain Sundell are continuing their researches, surely it would be justifiable for them to catheterise a series of "positive" cases, as by this means only can they establish their assumption that the spirochætes they have found are present in the bladder and are not due to accidental contamination.

I am, Sir, yours faithfully,

C. P. SYMONDS, M.R.C.P. Lond.,
Temporary Captain, R.A.M.C.

Nov. 7th, 1917.

TRAUMATIC RUPTURE OF THE HEART.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 13th is published a case of traumatic rupture of the heart, and as this injury does not appear to be of great frequency perhaps I might be allowed to mention the following case. At the end of last year I was called upon to perform a post-mortem examination of a man who had been knocked down by a taxi. There were several abrasions on the front of the chest, but no wounds. On the left side the third, fourth, fifth, sixth, and seventh ribs were fractured, about 5 inches from the sternum. The pericardium was torn at the apex and was filled with blood. There was a tear in the apex of the left ventricle, perforating the entire thickness of the heart wall and had evidently been caused by the broken end of one of the fractured ribs penetrating the pericardium and myocardium.

I am, Sir, yours faithfully,

J. F. O'GRADY,
Senior House Surgeon, Ancoats Hospital, Manchester.

Oct. 31st, 1917.

DIATHERMY.

To the Editor of THE LANCET.

SIR,—My attention has been called to Dr. W. J. Turrell's letter regarding my note on diathermy in THE LANCET of Oct. 20th, and I much regret that by an oversight I did not refer to Dr. Turrell's valuable paper on the subject read before the Royal Society of Medicine and published in the Proceedings of the society in March, 1916. The great value of this paper is generally appreciated by all interested in electro-therapeutics, and his later work has extended to a considerable degree the field of usefulness of this method of employing diathermy. I hope Dr. Turrell will accept my apologies for this omission, which I can assure him was not intentional.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 8th, 1917. L. W. BATHURST.

THE Grainger testimonial prize of 30 guineas at St. Thomas's Hospital, which is given for a series of specimens illustrative of recent anatomical and physiological research, has been awarded to Mr. R. S. Foss.

LITERARY INTELLIGENCE.—Messrs. Williams and Norgate have in the press a work by Dr. Mary Scharlieb, entitled "How to Enlighten Our Children: a Book for Parents," which deals in simple fashion with the problem of what should be said by parents to their children with regard to sex. The same firm announces in "The Making of the Future" Series, a volume by Professor H. J. Fleure, entitled "Human Geography in Western Europe," and concerned with race distribution and the influence of climate and environment in the evolution of man.

POOR-LAW GUARDIANS IN IRELAND.—Friction continues in Ireland owing to the refusal of the Local Government Board of Ireland to sanction the appointment of any medical officer of military age to Poor-law unions while Ireland is exempt from conscription. The low salary of the Poor-law doctors has led to the actual or threatened resignations of these officers, as the result of the refusal of their boards of guardians to give them adequate salaries, and the Irish Medical Committee has called upon the Local Government Board to remedy the position.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Lieut.-Col. C. R. A. Pye, D.S.O., Australian Infantry, was educated at Sydney University Medical School, and qualified. He afterwards studied in England and returned to Australia on the outbreak of war, and elected to remain a combatant officer, having previously attained to the rank of Captain in the Australian Infantry. He was awarded the D.S.O. in May this year for conspicuous gallantry and initiative when in charge of the whole of the front line held by his battalion.

Capt. J. B. Randall, R.A.M.C., attached Royal Field Artillery, received his medical education at St. Bartholomew's Hospital, London, and qualified in 1914. He held an appointment at St. George's Hospital, London.

Capt. R. A. Ireland, Canadian A.M.C.

Died of Wounds.

Capt. G. E. Chissell, R.A.M.C., was a student at Middlesex Hospital, and qualified in 1916, joining up shortly afterwards.

Died.

Lieut.-Col. W. Graham, R.A.M.C., was educated at Belfast, London, and Paris, and qualified in 1882. At the time of his death, the result of an accident, he was in charge of the Belfast War Hospital, and was Medical Superintendent of the Purdysburn Asylum, Belfast. He was the author of several articles on lunacy and allied subjects in medical literature.

Capt. H. L. Heslop, R.A.M.C., attached Durham Light Infantry, qualified at Durham in 1903. He held appointments at the Children's Hospital, Sunderland, and at the Tynemouth Jubilee Infirmary, and was in practice at Sunderland previously to joining the R.A.M.C.

Previously reported Wounded, now reported Died of Wounds.

Capt. K. A. MacCuish, Canadian A.M.C.

Wounded.

Capt. M. A. Power, R.A.M.C.
Lieut. D. W. Anderson, R.A.M.C., attached Norfolk Regt.
Capt. A. E. Huxtable, R.A.M.C.
Capt. W. B. Jepson, R.A.M.C., attached Devon Regt.
Capt. D. MacNair, R.A.M.C., attached Sherwood Foresters.
Lieut. W. H. Orton, R.A.M.C.
Capt. J. Gaff, R.A.M.C.
Lieut. J. A. C. Greene, M.C., R.A.M.C., attd. West Yorks Regt.
Capt. J. Morris, M.C., R.A.M.C., attached Cheshire Regt.
Capt. K. H. Stokes, R.A.M.C., attached Black Watch.
Surg. J. J. Keatley, R.N.
Capt. T. J. Kelly, R.A.M.C.
Capt. C. Wynne, R.A.M.C., attached Royal Field Artillery.
Capt. H. S. Moore, R.A.M.C.
Major N. E. Kirkwood, M.C., Australian A.M.C.
Major J. R. Muirhead, Australian A.M.C.
Capt. J. H. Fletcher, D.S.O., M.C., R.A.M.C.
Capt. J. Dunbar, R.A.M.C.
Capt. J. M. Forsyth, M.C., R.A.M.C., attached Cheshire Regt.
Capt. F. P. Jocelyne, M.C., R.A.M.C.
Capt. M. P. Power, R.A.M.C., attached Devon Regiment.
Capt. A. J. Howard, Australian A.M.C.
Capt. I. Morgan, Australian A.M.C.
Capt. J. P. Peake, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. A. McK. McRae, Royal Engineers, killed in action, youngest son of Dr. D. McRae, of London, E.

Second Lieut. I. V. Douglas, M.C., Royal Garrison Artillery, killed in action, youngest son of Dr. T. Douglas, late of Hill House, Sapperton.

Capt. J. B. Randall, R.A.M.C., killed in action, younger son of Mr. W. Randall, M.R.C.S., of Bridgend, Glam.

Lieut. F. C. C. Devlin, West African Frontier Force, killed in action, youngest son of Capt. T. P. Devlin, R.A.M., of British Columbia.

Lieut. J. E. Almon, Canadian Infantry, killed in action, younger son of the late Dr. T. R. Almon, of Halifax, Canada.

Second Lieut. T. B. M. Streatfeild, Royal West Kent Regiment, killed in action, only son of Dr. T. Streatfeild, of Folkestone.

Capt. G. M. Finlay, Hampshire Regiment, late Leinster Regiment, killed in action, youngest son of Colonel A. Finlay, late R.A.M.C.

OBITUARY OF THE WAR.

ALEXANDER WARD FORTESCUE SAYRES, M.D. BRUX., D.P.H.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel A. W. F. Sayres, who died of wounds Oct. 10th, was the youngest and only surviving son of the e Rev. Edward Sayres, rector of Cold Ashton, Gloucestershire. He was educated at Sherborne and studied medicine at St. Thomas's Hospital, qualifying in 1890, and holding thereafter several house appointments. After periods of private practice at Wincanton, Woodford (Essex), and Exeter he was appointed in 1913 tuberculosis officer to the Stonehouse district of Devon. Since November, 1914, he had served in France, where he was in command of a Wessex Field Ambulance. On July 17th last he was severely wounded, losing his



t leg and hand besides other injuries, to which he umbed three months later. A superior officer writes of : "His influence lives in the good work done by the ers and men of his ambulance, whom he trained with zeal and energy." Colonel Sayres married in 1894 the nd daughter of P. M. Muntz and leaves a widow and e children.

NOEL HUMPHREY WYKEHAM SAW, M.R.C.S. ENG.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

aptain N. H. W. Saw, who was killed in action on 9th at the age of 25, was younger son of Samuel Saw, or, of Blackheath. He was educated at Stratheden se School, Blackheath, and Cheltenham College, where ntered the O.T.C. He took his medical course at Guy's pital, where he was for four years a member of the Artists' Rifles. On the outbreak of war he applied to rejoin the Artists, but was advised to complete his medical course in October if possible, qualifying in February, 1915, and at once joining the R.A.M.C. (Special Reserve). In the following July he was sent to Mudros, and, becoming attached to the Worcestershire Regiment, went to the Gallipoli Peninsula, taking part in the evacuations at Suvla Bay and Cape Helles. After some months in



t and at Suez, he was present at the Battle he Somme, where last July he was awarded the ary Cross. He met his death whilst tending the ded, a shell landing in the doorway of the aid-post e he was working and killing him instantly. A fellow , who long shared the same dangers and vicissi- , writes of Captain Saw's cheery disposition and ish behaviour. At college he had some reputa- as an athlete, playing football for his hospital and heath.

WILFRID THOMAS CHANING-PEARCE, B.A., M.B., B.C. CAMB.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. T. Chaning-Pearce, who was killed on Oct. 1st in action at the age of 32 years, was third son of Dr. J. Chaning-Pearce, of Ramsgate. Educated at Lindenthorpe, Broadstairs, Rugby School, and Emmanuel College, Cambridge, he completed his medical study at Guy's Hospital, qualifying in 1911, after which he held various house appointments at Guy's Hospital and elsewhere. In October, 1914, he obtained a commission in the Royal Army Medical Corps, and saw much active service in France, latterly with the King's Liverpool Regiment. In September last he gained the Military Cross for gallantry and devotion to duty. In charge of the regimental aid-post, he moved it forward, on his own initiative, through a severe enemy barrage into a newly captured position, and there attended to wounded from 16 different battalions. He met his death at the hands of a German sentry, being shot through the chest. Letters from fellow officers speak of his unfailing cheerfulness and contempt of danger. Captain Chaning-Pearce was unmarried.



DUBLIN GENERAL HOSPITAL, BOULOGNE.

The third contingent of physicians and surgeons from Dublin has arrived in France and taken up work in the Dublin General Hospital. Amongst their number are the following: Lieutenant-Colonel William Taylor, Lieutenant-Colonel H. C. Drury, Major J. Lumsden, Major C. M Benson, Major S. H. Law, and Captain J. W. Killen.

SIR VICTOR HORSLEY'S GRAVE.

We are indebted to Messrs. Parke, Davis and Company for the accompanying photograph of Sir Victor Horsley's grave at Amara, taken by Sergeant E. Welton, R.A.M.C., attached to an Indian General Hospital. The grave is in the British Cemetery, which lies on the fringe of a palm grove, the mound consisting of earth baked and cracked in the sun.



RED CROSS FUNDS.—The Joint Finance Committee of the British Red Cross Society and the Order of St. John has received £10,000 from the Natal "Our Day" Fund collection. The contribution for "Our Day" in East Africa is £9000.

THE TREATMENT OF DISCHARGED DISABLED SAILORS AND SOLDIERS IN CIVIL HOSPITALS.

The following correspondence has taken place between the London War Pensions Committee and St. George's Hospital, and within the scope of two short letters exposes a very important position.

ENCLOSURES.

London War Pensions Committee,
43, Bloomsbury-square, W.C. 1,
18th October, 1917.

SIR,—As you are perhaps aware, the Ministry of Pensions have recently issued instructions empowering Local War Pensions Committees to enter into arrangements with civil hospitals for the treatment of discharged disabled sailors and soldiers. The scale of payment which Local Committees are authorised to make to hospitals which agree to treat discharged men is as follows:—

In-patient treatment: Not exceeding the minimum charge made in the case of ordinary patients, provided that the charge does not exceed in any case 28*s.* a week.

Out-patient treatment: Not exceeding 1*s.* for the first and 6*d.* for each subsequent attendance of the patient unless the treatment consists of, or includes, massage, electrical, X ray, or other special form of treatment, in which case the fee shall not exceed 2*s.* 6*d.* for the first visit and 1*s.* 6*d.* for each subsequent visit, to include all services.

Generally speaking, cases of wounds and injuries are sent for treatment to military hospitals, and it will be largely cases not included in these categories which would be sent to the civil hospitals. It is not possible to state precisely what number of men will be sent for treatment, but if the war continues the number will, no doubt, steadily increase.

One of the conditions upon which a local committee can enter into arrangements with a hospital is that the hospital authorities shall notify the Local Committee, in the case of in-patient treatment, of the date of admission or departure of the men as soon as either event occurs; and, in the case of out-patient treatment, immediately upon the commencement and termination of the treatment. Occasional reports will also be required in certain cases as to the men's progress.

I am directed to inquire whether the authorities of your hospital would be prepared to enter into an arrangement with the London War Pensions Committee of the nature indicated, and, if so, what would be the charge for (*a*) in-patient treatment, and (*b*) out-patient treatment. I am, Sir, your obedient servant,

(Signed) ETHEL V. W. WOOD,
Secretary.

The Secretary of the St. George's Hospital.

St. George's Hospital, S.W. 1.
Nov. 8th, 1917.

MADAM,—The House Committee of this hospital have had your letter of Oct. 18th, 1917, under serious consideration, and, as at present advised, see great difficulties in the way of their acceding to the proposals contained in it.

This hospital is a charitable institution established "for the relief of such poor, sick, and disabled persons as should appear real objects of charity," and is supported (on that basis) by voluntary subscriptions. The Committee fail to see that pensioners for whom the State has assumed responsibility come within even the widest interpretation of the trust which they have to administer.

Furthermore, it is likely that the condition of many of the pensioners sent for admission will be such that they would ordinarily be treated as out-patients, and the House Committee think it a matter of great importance that the beds of this hospital should be reserved for urgent cases that require the services of the highly skilled staff provided by the hospital and not be used by patients for whom it is wished to provide a temporary home.

Again, the question as to whether an honorary staff can be required to treat gratuitously patients for whom the State makes itself responsible is one still under discussion and has not been settled by the medical profession.

Even if the questions of principle mentioned above could be surmounted, the rate of payment proposed would not nearly cover the cost for provisions, drugs, &c., of a patient, without making any allowance for professional attendance, and it seems to my Committee quite wrong that the excess should fall on voluntary contributions.

While they do not see their way at present to enter into any such arrangements as you indicate, I am directed to remind you that the doors of this hospital are always open to suitable cases amongst pensioners in their position of sick and poor members of the community, both as out- and in-patients and without payment.

Yours faithfully,
(Signed) JAS. M. CHURCHFIELD,
Secretary.

The Secretary,
London War Pensions Committee.

The secretary to the London War Pensions Committee in making the offer to St. George's Hospital, as empowered by the Ministry of Pensions, asks for the charges per week per head that would be made for the reception of in-patients and out-patients respectively. In so doing mention is made of the limits to which charges can be met and of the class of cases that would be sent, but no allusion occurs to remuneration for medical services. The secretary of the hospital indicates that the hospital cannot, without defaulting from duty, admit pensioners of the State to an institution founded, and voluntarily supported by the public, in the interests of objects of charity, while the sums of money offered are, he adds, inadequate. The arguments here are so potent that the further reasons given for looking unfavourably upon the proposals of the London War Pensions Committee seem slight in comparison with them, but they are really of considerable significance. First, the in-patients of such a hospital as St. George's Hospital ought not to be of the class indicated by the London War Pensions Committee, the beds being required for urgent and difficult cases which can only be treated in a general hospital with full equipment. Secondly, it is doubtful whether the services of an honorary staff should be diverted from the sick poor to the benefit of State pensioners. Many of the discharged sailors and soldiers could be, and should be, treated by the general body of the medical profession at fees on a reasonable scale; the staffs of the civilian hospitals form the consultants in such cases, and reference could be had to them in all matters of doubt, with the result that the properly serious conditions should at once receive admission to, and treatment at, an institution.

MEDICAL RE-EXAMINATION OF MEN FOR THE ARMY

The rules for the guidance of Medical Assessors in connexion with the medical re-examination of men for the Army announced in our last week's issue, are set forth as follows in pamphlet R. 156, issued by the Local Government Board. Subject to the provisions contained in these rules, it becomes the duty of the Medical Assessors to examine medically and to grade any man who is referred to them in accordance with the rules, who attends for the purpose. The man shall be graded only after his case has been considered by at least three Medical Assessors, and after consultation between them.

At least three clear days before the date fixed for the re-examination of the man, the Medical Assessors shall send to him notice in writing of the date, time, and place fixed for the re-examination.

In the grading of a man the Medical Assessors shall proceed in accordance with the general instructions issued by the Minister of National Service to National Service Medical Boards, except in so far as is provided otherwise in these rules.

Before a man is examined by the Medical Assessors—(*a*) They shall have before them the man's medical history sheet prepared by the National Service Medical Board and the form of application—with the accompanying papers—sent to the Tribunal, or a copy of the form and papers, unless for good reason shown any of these documents cannot be obtained; and (*b*) the man shall be required to produce and surrender to the Medical Assessors the grade card issued to him after his examination by the National Service Medical Board. If in any case a man is graded by the Medical Assessors without the production of any of the above-mentioned documents, the fact and the reason shall be stated in their record of the man's grading and in their report to the Tribunal.

Before coming to a decision as to the grading of a man the Medical Assessors (if they consider this course necessary and if provision has been made in that behalf with the approval of the Local Government Board) may refer him for special examination, or may refer any question arising in connexion with the case, to a medical practitioner or institution, or may arrange for his temporary reception into an institution for special observation. If a man refuses to undergo the special examination or special observation, the Medical Assessors shall grade him on the facts available after his examination by them, in accordance with these rules; and shall also state the fact of his refusal in their record of his grading and in their report to the Tribunal.

When the Medical Assessors have come to a decision as to a man's grading they shall (*a*) record their finding in the prescribed manner; (*b*) cancel the grade card surrendered by the man, and the counterfoil of that grade card; (*c*) issue forthwith to the man a grade card in the prescribed form; (*d*) forward to the Assistant Director of Recruiting for the area the man's medical history sheet, with their finding recorded in the prescribed manner, the counterfoil of the man's new grade card which shall be attached to the medical history sheet, and the cancelled grade card and counterfoil; (*e*) return the form of application with the accompanying papers to the Appeal Tribunal, with their report as to the man's grading.

The Medical Assessors shall keep such records and furnish such reports as may be required by the Local Government Board.

The Medical Assessors may in any individual case recommend to the Local Government Board that a question of principle involved in the grading of the man be considered by the Advisory Medical Board, or such medical practitioners as may be deputed by the Advisory Medical Board for the purpose.

If the Local Government Board refer any such question to the Advisory Medical Board, the grading of the man shall be in accordance with the decision of the Advisory Board.

A further pamphlet (R. 157) contains detailed notes as to the functions of Medical Assessors and their precise mode of procedure.

SIR WILLIAM BABTIE AND THE ARMY COUNCIL

We noted last week the statement by the Under Secretary for War regarding Sir William Babtie's resumption of his duties at the War Office as Director of Medical Services. In reply to subsequent questions in the House of Commons Mr. Macpherson stated that the Army Council, after considering the explanation of Sir William Babtie in regard to Mesopotamia, came unanimously to the conclusion that it would be a great detriment to the public military service of this country if it were deprived of the continued services of Sir

William Babtie. The Council had therefore asked him to come back to the work which he was doing at the War Office and was doing exceedingly well. Mr. Macpherson said he was perfectly certain that any soldier with any knowledge of the work of the Army Medical Service in any of the campaigns with which Sir William Babtie's name had been associated would be of opinion that the Army Council acted rightly in continuing to use the services of a distinguished servant of the State. The report of the Committee of Inquiry on the Medical Service had not been received, and Mr. Macpherson was unable to say whether or not it would be presented to the House. It had been pointed out that the Director-General of Army Medical Services had no position on the Army Council. That matter had been considered by a representative committee before the war, which decided that it was not in the interests of the public service to place the Director-General on the Council. If any important question affecting the Army Medical Service arose and his experience was necessary for the Army Council, the Director-General was welcomed there, and every opportunity was given to him of stating the whole facts connected with the problem, and of making himself as useful as possible in helping the Army Council to its decision.

FOOD-SUPPLY ORGANISATION IN CANADIAN MILITARY HOSPITALS.—Instructions in connexion with the administration, conservation, and accounting of hospital supplies of military hospitals in England supported by the Canadian public have been issued in pamphlet form for the use of everyone directly concerned in the diet and food of the invalid soldier. Old-established orders as well as recent Army Council instructions are here brought together in a little book of 47 pages, interleaved with memoranda pages so that new orders and regulations may be inserted as they are issued. This interesting compilation may possibly be found useful by others than those directly responsible to the Canadian Army Medical Service.

THE number of officers and men receiving disability allowances from the Ministry of Pensions was approximately 225,000 on Oct. 1st last.

Medical News.

UNIVERSITY OF LONDON: COLONIAL EXAMINATIONS.—At examinations held recently the following candidates were successful:—

CEYLON (COLOMBO).

First Examination for Medical Degrees.—Gerald Samuel William de Saram, Appu Hennedige Don Stephen de Silva, Alan Raja Rutnam, and Kandiah Somasundram, Ceylon Medical College.

Second Examination for Medical Degrees, Part I.—Gerald Samuel William de Saram, Victor Emmanuel Perera Senewiratne, and Leanagé Don John Telesphor, Ceylon Medical College.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Nov. 10th:—

DOCTORS OF MEDICINE (M.D.).

Robert Thomson Leiper (honours), John Lindsay Boyd (commendation), William Henry M'Kinstry (commendation), David Smith (commendation), and Simon Harry Bennett.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council was held on Nov. 8th, Mr. Charters J. Symonds, the senior Vice-President, being in the chair. It was resolved to issue Diplomas of Membership to 87 successful candidates. Sir Herbert Waterhouse was elected the representative of the College on the managing committee of the Schiff Home of Recovery. A letter was read from the solicitor of the College stating that he had been informed by Messrs. Few and Co. of the death of the Countess Rignon di Cigala, the last life-tenant of the fund constituting the Cline Bequest, and that he was making inquiries to ascertain what steps it would be necessary to take to transfer into the name of the College the French rentes forming the fund to which the College had now become entitled.—Sir George Makins and Sir John Bland-Sutton were appointed the representatives of the College on the Board of Scientific Societies for the year 1918.

Two series of lectures which are to be given at the College by Professor A. Keith are likely to prove of interest and use at the present time, particularly to those who have to treat disabilities arising from gunshot injury. In these lectures Professor Keith proposes to review the "Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones." In the first series, which begins in the theatre of the College, Lincoln's Inn-fields, at 5 P.M. on Friday, Nov. 23rd, the discoveries and teaching of John Hunter, John Hilton, H. Owen Thomas, Stromeyer, Adams, Wolff, &c., are to be reviewed; in the second series, beginning on Jan. 14th, disabilities and deformities as they affect the various regions of the body will be considered. The various matters to be dealt with may be seen in the Medical Diary given in another column from week to week. The lectures will be illustrated by specimens drawn from the Army Medical Collection now on exhibition in the Museum of the College. The lectures are open to all medical men.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of the association will take place on Tuesday, Nov. 27th, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Lieutenant-Colonel David G. Thomson, R.A.M.C., at 3 P.M. On the same day and at the same place will meet: Educational Committee at 10.45 A.M.; Parliamentary Committee at 11.30 A.M.; Council at 1.45 P.M.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—This society is to be congratulated upon a successful year of working during trying conditions. The report presented at the ninety-third annual general meeting, held at the society's office, 15, St. James's-square, S.W., on Nov. 2nd, shows that the net new life business was £806,305, as compared with £737,472 in 1915–16. The total premium income was £468,345, showing an increase of £12,015, and the gross interest income rose by £11,268 to £285,340. The claims by death amounted to £360,484, the total payments being within the amount expected. Special bonus payments of £260,937 have been made in addition to the ordinary outgoings. After meeting these the life assurance fund shows a decrease of £95,332, and now amounts to £6,095,669.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Oct. 9th, 19 cases were considered, and £176 voted to 16 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 60, of L.R.C.P. and S. Edin. who practised at Liverpool and died in 1894. Applicant has for some years acted as health visitor for a County Council, but owing to ill-health and increasing age will have to resign. Has recently had an operation on her foot. Income as visitor, £104 per annum. The Fund promised a grant of £12 per annum when she has to give up her work.—Daughter, aged 50, of M.B. Lond. who practised at Newcastle, Staffs., and died in 1885. Applicant lost all her income through bad investments, and her health is so bad that she is unable to work. Relieved three times, £29. Voted £12 in 12 instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised at Newport, Mon., and died in 1892. Has tried to earn a living by keeping a children's school, but owing to ill-health, and the high cost of living, cannot make it pay. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 72, of L.R.C.S. Irel. who practised in London and Wales and died in 1915. She was left entirely without means through long illness of husband. Has two daughters, one of whom is very delicate, and the other helps all she can. Has the old age pension. Relieved twice, £26. Voted £12 in 12 instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Wymondham and died in 1870. Applicant is quite unable to work, and the loss of her benefactress 14 years left her quite destitute. Relieved nine times, £52. Voted £12 in 12 instalments.—Daughters, aged 53 and 45, of L.S.A. Lond. who practised in London and died in 1903. One is an epileptic, and the other unable to earn a living. Joint income £69 a year. Relieved jointly nine times, £101. Voted £18 in 12 instalments.—Widow, aged 68, of L.S.A. Lond. who practised at Ipswich and died in 1901. Was left entirely without means, and has tried to earn a living by taking in lodgers. Has a family of five, four of whom are married, and only able to help slightly, so finds it difficult to get on. Relieved 14 times, £152. Voted £6 in six instalments, with leave to apply again in six months.—Daughter, aged 67, of M.D. Edin. who was a medical officer in the Army and died in 1898. Applicant is not entitled to any pension from the R.A.M.C., and her health has always been very bad, and has had to rely on help from friends, many of whom have recently died. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 48, of M.R.C.S. Eng. who practised in London and New Zealand, and died in 1901. She was left unprovided for with three young children. She has endeavoured to make a living by taking in boarders, but her house being on the Essex coast she had not been able to make it pay since the war commenced, so has had to give it up. Her eldest son has joined a cadet school, with a view to taking a commission. Relieved six times, £71. Voted £10.—M.D. Glasg., aged 78, married, and who had practised in London. Applicant had to give up work a few years ago owing to ill-health, and the only income is an annuity his wife has, and an Epsom pension. Applicant has had several strokes. Relieved three times, £37. Voted £18 in 12 instalments.—Daughter, aged 51, of M.D. Glasg. who practised at Glasgow and died in 1897. Was left without means, and in consequence of ill-health has never been able to do much work. Has two small pensions from other societies, and is now assisting in the management of an hostel for girls, but only receives her board and lodging. Relieved three times, £30. Voted £10.—Widow, aged 56, of L.R.C.S. Glasg. who practised at Heaton-on-Tyne and died in 1899, leaving applicant unprovided for with six children. Three are now married and unable to help. Endeavours to make a living by taking in boarders. Relieved 12 times, £130. Voted £12 in 12 instalments.—Daughter, aged 56, of L.R.C.P. Lond. who practised at Birmingham and died in 1874. Endeavours to make a living by taking in lodgers, but has not been successful of late. Has only received £3 this summer. Relieved six times, £68. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W. 1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

University Representation.

TEN Members to University constituencies in Great Britain are given by the Redistribution Schedule of the Representation of the People Act, which has been adopted in Committee in the House of Commons. As finally adjusted the University representation is allocated as follows:—

England and Wales.—University of Oxford, 2; University of Cambridge, 2; University of London, 1; Universities of Durham, Victoria (Manchester), Wales, Liverpool, Leeds, Sheffield, Birmingham, and Bristol, 2.

Scotland.—Universities of Edinburgh, St. Andrews, Glasgow, and Aberdeen, 3.

It was at first proposed that London University should be grouped along with the eight new English Universities, and that in combination they should return three Members. This proposal was modified by the House of Commons, which decided that London University should continue to be independently represented by a Member of its own, and that two Members should be returned by the other eight in combination. Irish University representation is not affected by the Bill.

Midwives (Ireland) Bill.

Mr. DUKE, the Chief Secretary for Ireland, has introduced in the House of Commons a Bill "to secure the better training of midwives in Ireland and to regulate their practice." It has been read a first time.

National Health Insurance Bill.

The effect of the National Health Insurance Bill, which Sir E. CORNWALL recently introduced in the House of Commons, is to make a long series of amendments in the existing Acts relating to National Health Insurance. It is a measure of 45 clauses. The first five are concerned with financial provisions. The other part of the Bill deals with such matters as qualifications for becoming voluntary contributors, rates of contribution in certain exceptional cases, membership of Approved Societies, arrears of contributions, transfers, payment of benefits, and so on.

Clause 31 contains provisions as to medical practitioners. The first subsection runs as follows:—

> Where the Insurance Commissioners in pursuance of their powers under Section 15 of the principal Act remove the name of any practitioner from any list of medical practitioners prepared under the said section they may, if they think fit so to do, remove his name from all or any of the other lists so prepared in which it is at the time included, and until such time as the Commissioners direct to the contrary that practitioner shall be disqualified for inclusion in any other list, whether in England, Scotland, or Wales, in which his name was not then so included or from which it was then removed.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 7TH.

Officers in Territorial General Hospitals.

Major DAVID DAVIES asked the Under Secretary for War whether he would explain why captains serving as *à la suite* officers of the Territorial general hospitals were allotted precisely the same kind of work, the same hours of work, and bore the same responsibility for the treatment of their patients as lieutenant-colonels and majors attached to the same hospitals, whilst they received no temporary step in rank or addition to their pay.—Mr. MACPHERSON answered: The question of promotions to complete establishments of general hospitals is under consideration, but in all hospitals medical officers are frequently employed according to their professional aptitude and line of work, and, while senior officers are naturally given the more responsible duties, there is no reason why *à la suite* officers of captain's ranks, who are often of the highest professional standing, should not be employed in the same way.

Inoculation in the Army.

Mr. LYNCH asked the Under Secretary for War whether, in view of misconceptions as to antityphoid inoculation and prejudice against that form of treatment, he would direct his attention to a recent report on the subject communicated to the French Academy of Science by Dr. Richet, which showed the boon to the soldier, as well as to the State, conferred by this system of inoculation; whether he would have this document translated and circulated in quarters where it was likely to do good; and whether similar statistics referring to British forces would be published and laid upon the table of the House.—Mr. MACPHERSON replied: I am not familiar with the document to which my honourable friend refers, but the prejudice against antityphoid inoculation in the Army is negligible, and the course which he suggests is not considered necessary.

Mr. CHANCELLOR asked whether the 3000 who fell victims to typhoid in the Army in France were merely cases or deaths; whether they included cases of paratyphoid, dysentery, and diarrhœa; if not, how many cases, respectively, of these diseases had occurred and how many cases returned as P.U.O.; and what proportions of cases and what proportions of deaths from each of the diseases named arose amongst inoculated and uninoculated, respectively.—Mr. MACPHERSON said in reply: I am not aware what the figure of 3000 is to which my honourable friend is alluding. A hundred and eighty-four officers and men have died of enteric in France and 48 of paratyphoid. There have occurred 2321 cases of typhoid (enteric) and 3871 cases of paratyphoid. The totals for dysentery are not available, and it would take a long time to work them out. For diarrhœa it would be necessary to apply to France. I have no figures regarding P.U.O. (pyrexia, i.e., fever, of uncertain origin). Of the deaths from enteric—namely, 184—62 had been inoculated and 122 had not been inoculated. Of the 48 deaths from paratyphoid 39 had been inoculated and 9 had not been inoculated.

Mr. CHANCELLOR asked whether there were 50,000 cases of death from typhoid in the South African War; if not, would he say how many cases and how many deaths, respectively, occurred in that war from this disease; and whether inoculation was extensively practised in the Army in South Africa.—Mr. MACPHERSON answered: The number of cases of typhoid fever amongst the troops in the South African War was: officers 2066, other ranks 57,684; and of deaths: officers 205, other ranks 8022. Inoculation was not so extensively practised in the Army in South Africa as it is in the present campaigns.

Exchange of Prisoners.

Replying to Mr. PETO, Mr J. F. HOPE (representing War Prisoners Department) said: We have been informed this morning that the German authorities have agreed to the conditions suggested by us for the transport of exchanged prisoners to and from Holland. The date on which the first sailing will take place now rests solely on the choice of a route between Rotterdam and Boston, and I understand that this matter is now in the hands of the Admiralty.

THURSDAY, NOV. 8TH.

Renewal of Artificial Limbs.

Major CHAPPLE asked the Parliamentary Secretary to the Ministry of Pensions what proportion of limbless men supplied with artificial limbs were returning for renewals; whether he had evidence that this was due to the premature manufacture of the limb many months before full shrinkage of the stump had taken place; and whether he would send a commission to France and Italy to investigate the system of providing limbless men with temporary limbs, costing only a few shillings, pending the shrinking and moulding of stumps to their permanent condition.—Sir A. GRIFFITH-BOSCAWEN replied: It is recognised that a large portion of the men who are fitted with artificial legs have to return for the limb to be refitted within six months or a year, but it is not possible from available statistics to state the exact proportion. The refitting is necessitated by shrinking of the stump, but this shrinking will not take place simply as the result of the passage of time, but only as a result of the pressure of the socket of an artificial limb, so that there is no evidence that limbs are being fitted prematurely. The policy of supplying a provisional limb of a simple type before the fitting of the permanent limb is one on which surgical opinion is divided. It has been adopted in some cases, and its wider adoption is under consideration. It is unnecessary to send a commission of inquiry abroad, ample evidence being available in this country.

MONDAY, NOV. 12TH.

Infantile Mortality.

Mr. ANDERSON asked the President of the Local Government Board whether he would state the official estimate of the number of children dying every week whose death was due to preventible causes; why the Government delayed legislation on this matter; whether the vested interests of large insurance companies were a contributory cause of the delay; and whether he could make a statement as to any future action it was proposed to take.—Mr. HAYES FISHER replied: In 1916 the numbers of deaths of children under five years of age registered in England and Wales was 109,365. It is, of course, not possible to state exactly how many of these were due to preventible causes, but I am satisfied that if the local authorities in England and Wales were given the same powers as are now possessed by local authorities in Scotland and Ireland, and if they used them, as I have reason to know that they would do, the work which they are now doing in regard to infant welfare could be developed so as to effect great reductions in the numbers of deaths, and, may I add, not only of infants but of mothers. My department has for some time been anxious to secure for local

authorities this extension of powers and local authorities have pressed for them, but owing to the opposition from insurance organisations legislation has hitherto been delayed.

Medical Problems of the Air Service.

In moving the second reading of the Air Forces Bill, Major BAIRD (Parliamentary Secretary to the Air Board) said in the course of his speech: One of the most important needs is a specialised medical service. It has been found by experience that flying men are subject to many peculiar physical disabilities, and research into the prevention and cure of these disabilities has advanced very rapidly. So long, however, as the flying services remain merely as appendages to the Army and Navy it is very difficult to provide for the study of these medical matters and for the special treatment of the patient. Knowledge of the subject is almost entirely limited to those few medical officers and civil practitioners who have had considerable numbers of flying men continuously under their care, and it is necessary at once to take special measures to provide special accommodation for the cases and a separate staff to concentrate on the problems which have arisen. The mere selection of candidates for the flying services has become a highly specialised business, and the standard of fitness required for flying is diverging from the standard required for the ordinary naval and military services. There are many minor physical imperfections which render a man unfit for flying, but which, if taken in time, may be removed or cured. Still more important, many precautions have to be taken to enable pilots to maintain their fitness under the severe conditions of modern air warfare. These are only examples of the necessity of securing a body of men whose sole business will be to concentrate on this particular branch of medical science, which is necessary for the welfare of our flying men.

Treatment of Shell-shock in London.

Answering Colonel CLIVE on the question of the treatment of shell-shock patients in London, Mr. MACPHERSON wrote: It may be possible to discontinue the neurological centre in London as a treatment centre in connexion with the changes which are now being made.

TUESDAY, NOV. 13TH.

Contagious Disease in the Army.

Commander WEDGWOOD asked the Under Secretary for War whether the Army Council proposed to make use of the Defence of the Realm Act for the purpose of reintroducing any provision which would have the same effect as the Contagious Diseases Acts.—Mr. MACPHERSON answered: No, Sir, I am not aware of any such intention.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: B. L. Skeggs and J. B. Orr, D.S.O., M.C.

ARMY MEDICAL SERVICE.

Col. J. W. Bullen is retained on the Active List under the provisions of Articles 120 and 522 Royal Warrant for Pay and Promotion, and to be supernumerary.

Temp. Lieut.-Col. T. P. Legg, C.M.G., to be temporary Colonel.

TERRITORIAL FORCE.

Col. W. Kinnear relinquishes his commission on account of ill-health, and is granted permission to retain his rank and to wear the prescribed uniform.

ROYAL ARMY MEDICAL CORPS.

The undermentioned are granted temporary rank whilst serving with No. 83 (Dublin) General Hospital:—As Lieutenant-Colonel: H. C. Drury. As Majors: J. Lumsden, C. M. Benson, S. H. Law. As Captain: J. W. Killen.

The undermentioned officers are seconded for duty with a General Hospital: Lieut.-Col. (Brevet Col.) A. B. Gemmel, Major R. A. Bickersteth, Capt. R. W. MacKenna.

Lieut.-Col. A. W. Mackintosh is restored to the establishment.

Major (temp. Lieut.-Col.) J. G. Andrew and Capt. (temp. Major) J. Eason relinquish their temporary rank on an alteration in posting, and are restored to the establishment.

Temp. Major G. D. Gray to be acting Lieutenant-Colonel whilst in command of the Chinese General Hospital.

Temp. Major K. W. Monsarrat (Capt., R.A.M.C., T.F.) relinquishes his temporary commission on reposting to T.F.

E. W. Hore (Lieut.-Col., I.M.S., retired) to be temporary Major whilst employed with the Wharncliffe War Hospital.

Capt. F. E. Price is seconded for service overseas, and is restored to the establishment.

Temp. Capts. G. Schofield and K. F. Rogers, Canadian A.M.C., to be temporary Majors.

J. W. Darling, late temporary Captain, is granted the honorary rank of Captain.

Temp. Lieut. R. Franklin to be temporary Captain.

Temporary Lieutenants to be temporary Captains: A. V. Greaves (Canadian A.M.C.), R. W. Blackwell (Canadian Army Dental Corps), J. B. Anderson, J. Campbell, K. J. Aveling, G. Adam, A. Fleming, P. J. Verrall.

To be temporary Captains: L. E. Williams, H. C. Martin, C. D. Pile, D. Gillespie.

Temp. Hon. Lieut. R. A. Holmes to be temporary Honorary

To be temporary Lieutenants: W. Wright, J. M. Glas Naish, V. C. Pennell, W. H. Richardson, H. W. P. Young, E. G. M. Cameron, J. McCausland, H. M. Gilbertson, B. R. Vick Bradley, A. Evans, P. J. Flood, F. W. K. Lawrie, W. S. Git Howell, E. W. Atkinson, G. W. Clark.

To be temporary Honorary Lieutenants: S. R. Meaker, J. I J. M. Bremner.

Officers relinquishing their commissions: Temp. Capt. W. Temp. Lieut. M. A. Harrington, and Temp. Lieut. A. S. account of ill-health).

SPECIAL RESERVE OF OFFICERS.

J. F. van der Westhuyzen, late Captain, is granted the hono of Captain.

To be Lieutenants: W. L. Yell (from Aberdeen University Co O.T.C.), J. B. D. Galbraith, I. M. Robertson, T. R. Wilson, White, J. Macleod, and A. Riddell (from Glasgow University gent, O.T.C.).

TERRITORIAL FORCE.

Major L. B. Rawling is restored to the establishment.

Major A. S. F. Leyton relinquishes his commission on a ill-health.

Major A. Wilson vacates his appointment on the perma sonnel, and is restored to the list of officers available for mobilisation.

Capt. (temp. Major) D. H. de Souza relinquishes his tempo on alteration in posting, and is restored to the establishment.

Capt. (acting Lieut.-Col.) A. A. Hingston to revert to tempor on ceasing to command a Field Ambulance.

Capts. R. A. Brodrick, M.C., and C. L. Lander to be act tenant-Colonels whilst commanding a Field Ambulance.

Capt. W. B. Secretan is seconded for duty with a War Hospi

Capt. (acting Lieut.-Col.) G. S. Williamson relinquishes h rank on ceasing to command a Field Ambulance.

Capt. H. F. Wilkin, M.C., from Army Medical Service, to be

Capt. S. Acheson relinquishes his commission on accou health contracted on active service, and is granted the hono of Captain.

Temp. Lieut. and Medical Officer W. Langran to be t Captain, 5th Battalion, Devonshire Volunteer Regiment.

TERRITORIAL FORCE RESERVE.

To be Captains: Capt. C. C. Messiter, from R.A.M.C.; Capt. from R.A.M.C.; Capt. W. J. Lacy-Hickey, from R.A.M.C.; Porter, from R.A.M.C.

Capt. R. G. Wills relinquishes his commission on accou health.

URBAN VITAL STATISTICS.

(Week ended Nov. 10th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh to an aggregate civil population estimated at nearly 17,000,00 the annual rate of mortality was 11·8, against 12·0 and 12·6 in the two preceding weeks. In London, with a popul ceeding 4,000,000 persons, the death-rate was 12·5, or 0·5 below that recorded in the previous week; among the r towns the rates ranged from 5·0 in Blackpool, 5·6 in Le 5·7 in Lincoln to 16·5 in Exeter, 17·0 in Liverpool, an Sunderland. The principal epidemic diseases caused 246 deat corresponded to an annual rate of 0·8 per 1000, and included 70 infantile diarrhœa and measles, 51 from diphtheria, 36 from w cough, 10 from scarlet fever, and 9 from enteric fever. The de diarrhœa, which had declined from 278 to 114 in the five weeks, further fell to 70, and included 18 in London, 6 in Birm and 4 each in Liverpool, Manchester, Leeds, and Gateshead. cases of scarlet fever and 1469 of diphtheria under treatment Metropolitan Asylums Hospitals and the London Fever Hosp respectively 3 below and 60 above the numbers remaining at th the preceding week. Of the deaths from all causes in the 122 resulted from violence. The causes of 42 deaths were un of which 9 were registered in Birmingham, 7 in Liverpool, a in Darlington, Sunderland, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an a population estimated at nearly 2,500,000 persons, the annual mortality was 11·9, against 11·4 and 12·3 per 1000 in the two p weeks. The 254 deaths in Glasgow corresponded to an rate of 11·9 per 1000, and included 3 each from diphtheria and diarrhœa, 2 from whooping-cough, and 1 from measles. The in Edinburgh were equal to a rate of 14·0 per 1000, and include diphtheria and 1 from whooping-cough.

Irish Towns.—The 145 deaths in Dublin corresponded to a rate of 18·9, or 3·5 per 1000 in excess of that recorded in the week, and included 4 from infantile diarrhœa, 2 from measl each from scarlet fever, whooping-cough, and diphtheria. deaths in Belfast were equal to a rate of 14·9 per 1000, and 1 fatal case each of enteric fever, measles, whooping-cou diarrhœa.

Appointments.

Successful applicants for vacancies, Secretaries of Public Insti and others possessing information suitable for this colu invited to forward to THE LANCET *Office, directed to Editor, not later than 9 o'clock on the Thursday morning week, such information for gratuitous publication.*

REID, P., has been appointed Certifying Surgeon under the and Workshop Acts for the Cleator District of the co Cumberland.

WILSON, A. S., Certifying Surgeon under the Factory and Worksh Acts for the Hastings District of the county of Sussex.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNET, CLARE HALL SANATORIUM, South Mimms.—Temporary Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.
BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary 8 guineas per week.
BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.
BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.
BURY ST. EDMUNDS, SUFFOLK HOSPITAL, Ampton Hall.—Assistant Resident Medical Officer. Salary £200 per annum, with board, &c.
CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Temporary Assistant Medical Officers. Salary £7 7s. per week, with board, &c.
CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W.—Resident House Surgeon and Registrar. Salary £200 per annum.
DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.
GLAMORGAN COUNTY COUNCIL.—Temporary Female Medical Officer for medical inspection of children in public elementary schools. Salary at rate of £300 per annum.
HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.—Resident House Physician for six months. Salary at rate of £200 per annum.
HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C. — Anæsthetist. Salary £25 per annum.
INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary 3 guineas per week, and 1 guinea additional as war bonus, with board, &c.
LEICESTER ROYAL INFIRMARY.—House Surgeon. Salary £250 per annum, with board, &c.
LEOPARDSTOWN PARK, near Dublin, HOME OF RECOVERY FOR DISCHARGED NEURASTHENIC SAILORS AND SOLDIERS.—Resident Medical Officer. Salary £400 per annum, with board, &c.
LONDON LOCK HOSPITAL, Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.
NETLEY, BRITISH RED CROSS HOSPITAL.—Anæsthetist.
NEW HOSPITAL FOR WOMEN, Euston-road.—Female House Physician, Obstetric Assistant, Two House Surgeons, all for six months. Salary at rate of £50 per annum, with board, &c. Also Resident Medical Officer at House of Recovery, New Barnet, for six months. Salary at rate of £60 per annum. Also Clinical Assistants and Anæsthetists.
NOTTINGHAM GENERAL HOSPITAL.—Female Casualty House Surgeon for six months. Salary at rate of £250 per annum, with board, &c.
NORTHAMPTONSHIRE SANATORIUM, Creaton, near Northampton.—Medical Superintendent. Salary £500 per annum, with board, &c.
PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary £120 per annum, with board, &c.
QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary £100 per annum, with board, &c.
RECUPERATIVE HOSTELS (FOR SAILORS AND SOLDIERS INVALIDED FROM H.M. SERVICES WITH NERVE-STRAIN), 43-45, Fitzjohn's-avenue, N.W.—Honorary Neurologist and Honorary Laryngologist. Also Resident Medical Officer. Salary £400 per annum.
ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.
ROYAL COLLEGE of PHYSICIANS. Pall Mall East.—Milroy Lecturer.
WARWICKSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary £325 per annum.
WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Assistant Resident Medical Officer. Salary £150 per annum, with board, &c.
WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary at rate of £200 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

STEINBACH.—On Nov. 4th, at Newton House, Knaresborough, the wife of Horace Steinbach, M.R.C.S., L.R.C.P. Lond., of a daughter.

MARRIAGES.

GLEGG—TYNDALE.—On Nov. 6th, at SS. Philip and James, Oxford, Wilfrid Glegg, M.D., M.R.C.P.E., to Marcia Edersheim, youngest daughter of the late Rev. E. F. G. Tyndale and of Mrs. Tyndale, Fyfield-road, Oxford.
MARRIOTT—FOOKS.—On Nov. 8th, by licence, at Beckenham Parish Church, Captain F. K. Marriott, M.C., R.A.M.C., to Dora Eveline, of Freathmore, Lower Bourne, Farnham, granddaughter of the late Robert Fooks, of Bridport, Dorset, and the late William Wallace Dunning.

DEATHS.

GRAHAM.—On Nov. 5th, at Purdysburn House, Co. Down, the result of an accident, Lieutenant-Colonel Graham, M.D., Belfast War Hospital, and Medical Superintendent, Purdysburn Villa Colony Asylum, Belfast.
RANDALL.—Killed in action, on Oct. 31st, John Beaufoy Randall, Captain, R.A.M.C., M.B., M.S. Lond., M.R.C.S., L.R.C.P., B.Sc., aged 28 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE MANDRAKE IN FOLK-MEDICINE.

THE root of the mandrake (*Atropa mandragora, M. officinarum*) is a ready-made amulet, resembling, as it does, the lower limbs of a human being and often a grotesque human body. A naked mannikin may suggest to primitive minds all kinds of thoughts. Hence in Scripture the fruit or root of the mandrake figures as a love-charm (Genesis xxx.), by means of which Rachel is enabled to escape the reproach of barrenness and to become the mother of Joseph. At a later period, as is shown by Professor Sir James G. Frazer in his recently published monograph on "Jacob and the Mandrakes," the root, rather than the fruit of the plant, became a sovran amulet. Solomon, according to "the Arab Dioscorides," Ibn Beithar, carried a mandrake in his signet ring, which gave him command over the jinn, or spirits. The plant, Ibn Beithar avers, is a remedy for all maladies caused by jinn, demons, and Satan. It cures lameness, cramp, epilepsy, elephantiasis, madness, loss of memory, besides affording protection against every kind of mishap. The mandrake root was well known as a charm to the ancient Greeks and to Pliny and the Romans, and it reappears in the Middle Ages as the centre of a perfect tangle of sinister superstition. As a rule the plant was held to spring up under the gallows, where it was fertilised by the drippings of corpses. In order to obtain it a laborious ritual had to be observed. It was death to dig it up, so its roots were carefully loosened, and a dog, preferably black, was tied to it, which, springing after its master or tempted by food, drew the plant out of the ground and died in the act, while the plant shrieked dolefully. The evil genius having left the plant and passed into the dog, the root might be safely handled and used as a valuable ingredient in the pharmacopœia, where it figured as a promoter of conception and as a cure-all. The Transylvanian gipsies still practise this ritual. In Syria and the East generally the mandrake is still used as a charm, and the making of counterfeit mandrakes, closely resembling hairy ape-like men, is carried on as an industry. Sham mandrakes are often sold for large sums.

"To make the counterfeit mandrake," says "A Thousand Notable Things" (London and Salisbury, 1791), "which hath been sold by deceivers for much money, do thus as followeth: Take the great double root of Briony, newly taken out of the ground, and with a fine sharp knife frame the shape of a man or a woman ['the woman drake' of our rustics] ..... with his stones and cods, and other members thereto, and when it is clean done, prick all these places with a sharp steel, as the head, the eyebrows, the chin, and privities, and put into the said holes the seeds of millet, or any other that brings forth other small roots, that do resemble hairs (which Leek seed will do very well, or else Barley). After this, put it into the ground, and let it be covered with earth, until it have gotten upon it a certain little skin, and then thou shalt see a monstrous idol, and hairy, which will become the party, if it be workman like, or cunningly made or figured." The quotation is from Mizaldus. "Another trim way for the like, is in the *Natural and Artificial* conclusions, englished by Thomas Hill."

It is curious to reflect that this quotation from Mizalde was served up to our great grandmothers as lately as 1791. Present-day rustics attach great virtue to the mandrake root, which is eaten as a cure for indigestion. The root is said to taste bitter, but the fruit can be eaten, a little at a time, and the fruit, perhaps, rather than the root, was the ancient mandragora, used as an anæsthetic or narcotic, and known as such to Shakespeare, who, always keenly reflecting the popular beliefs of his age, makes Iago say to his dupe—

> "Not poppy, nor mandragora,
> Nor all the drowsy syrups of the world,
> Shall ever medicine thee to that sweet sleep
> Which thou owedst yesterday."

The literature of the mandrake is enormous. Perhaps one of the best accounts of it was given by Mary Howitt in her poem "The Mandrake," which figured in her charming work "Birds and Flowers and Other Country Things," published in 1838.

THE address of the Department of the Medical Director General of the Navy is now 12, Charles-street, Berkeley-square, London, W.1.

The following journals, magazines, &c., have been received:—Archives Médicales Belges, Veterinary Review, Cleveland Medical Journal, Annales de Medicina e Cirurgia, Medical Review, Archives of Internal Medicine, Archives of Pediatrics, Revista Odontologica, Therapeutic Gazette, Canadian Medical Association Journal, Military Surgeon, Edinburgh Medical Journal, British Journal of Dental Science, Maryland Medical Journal, Canadian Practitioner, American Medicine.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. C. H. Browning and Mr. R. Sulbransen: Bactericidal Properties conferred on the Blood by Intravenous Injections of Diamino-acridine-sulphate (communicated by Prof. R. Muir).—Mr. W. D. Lang: The Pelmatoporinæ, an Essay on the Evolution of a Group of Cretaceous Polyzoa (communicated by Dr. F. A. Bather.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 20th.

GENERAL MEETING OF FELLOWS, at 5 P.M.

Ballot for Election to the Fellowship. (Names have already been circulated.)

MEETINGS OF SECTIONS.

Wednesday, Nov. 21st.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Conjoint Meeting with the FOLK LORE SOCIETY.

Paper:

Dr. R. R. Marett: The Medicine Man.

Exhibition of Books, Pictures, &c. (at 4.30 P.M.).

Friday, Nov. 23rd.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.

Cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY.—8.30 P.M., Resumed Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C. 2.

TUESDAY.—4.15 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. 4.30 P.M., The President's Address. 4.45 P.M., Exhibition of Clinical Cases by Dr. M. Dockrell, Dr. J. L. Bunch, Dr. W. K. Sibley, and Capt. W. Griffith.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY.—4.30 P.M., Address:—Mr. A. A. C. Swinton: Science and its Functions.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W. 1.

WEDNESDAY.—8 P.M., Paper:—Mr. E. Heron-Allen and Mr. A. Earland: On Some Foraminifera from the North Sea, &c. V., On Thurammina Papillata, Brady: A Study in Variation. Mr. F. M. Duncan: An Exhibition of Lantern-slides in illustration of his paper read at the last meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First-Aid and Ambulance Students:—

MONDAY.—5 P.M., Mr. S. G. Shattock: Inflammation and Gunshot Injuries.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella. 3.30 P.M., Special Demonstration:—Dr. T. R. Whipham: Selected Cases of Children's Disease.

TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting.

WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

THURSDAY.—2.30. P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. E. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.

FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

SATURDAY.—2.30 P.M., Surgical Operations: Mr. H. W. Carson.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. J. L. Bunch: Itching Skin Diseases and their Treatment.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Treatment of Eczema.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
Practical Handbook of Surgical After Treatment. By Alan H. Todd, B.Sc., M.S. Lond., F.R.C.S. Eng. Second edition. 4*s.* 6*d.* net.

ARROWSMITH, J. W., Bristol.
A History of the Bristol Royal Infirmary. By G. Munro Smith, M.D., L.R.C.P. Lond., M.R.C.S., late Colonel, R.A.M.C. (T.). 12*s.* 6*d.*

BAILLIÈRE, TINDALL, AND COX, London.
Collected Papers on Analytical Psychology. By C. G. Jung, M.D., LL.D., formerly of the University of Zurich. Authorised translation edited by Dr. Constance E. Long, Medical Officer, Education Board. Second edition. 15*s.* net.
Insanity in Everyday Practice. By E. G. Younger, M.D. Brux., M.R.C.P. Lond., D.P.H. Fourth edition. Price 5*s.* net.
Practical Guide to Diseases of the Throat, Nose, and Ear, for Senior Students and Junior Practitioners. By William Lamb, M.D., C.M. Edin., M.R.C.P. Lond. Fourth edition. 8*s.* 6*d.* net.
A System of Hand and Finger Re-Education (for Use in Military Orthopædic Gymnasia). By Captain C. W. Sewell, M.C., Sherwood Foresters. 6*d.* net.

CASSELL AND CO., London.
Tropical Diseases: A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, G.C.M.G., M.D., LL.D. Sixth edition, revised and enlarged. 16*s.* net.

CHAPMAN AND HALL, London, and JOHN WILEY AND SONS, New York.
Histology of Medicinal Plants. By William Mansfield, A.M. Phar.D. First edition. 13*s.* 6*d.* net.
Pasteurisation of Milk from a Practical Point of View. By C. H. Kilbourne. 6*s.* net.
A Text-book of Inorganic Chemistry. By A. F. Holleman, Ph.D. Fifth edition. Issued in coöperation with H. C. Cooper. 10*s.* 6*d.*

CHURCHILL, J. AND A., London.
Elementary Hygiene for Nurses. A Handbook for Nurses and Others. By H. C. Rutherford Darling, M.D., M.S. Lond., F.R.C.S. Eng., F.R.F.P.S. Glasg. 3*s.* net.

GREEN, W., and SON, Edinburgh and London.
Encyclopædia Medica. Second edition. Under the General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Vol. V. Filix Mas to Heart. 20*s.* net.

LAURIE, T. WERNER, London.
Practical Auction Bridge. By "Buccaneer." With the New Laws and Specimen Hands. 5*s* net.
In the World. By Maxim Gorkie. 12*s.* 6*d.* net.

LEWIS, H. K., London.
Otosclerosis (Idiopathic Degenerative Deafness). By A. A. Gray, M.D., F.R.S.E. 12*s.* 6*d.* net.

LIVINGSTONE, E. AND S., Edinburgh.
Lectures on Medicine: A Handbook for Nurses. By Chalmers Watson, M.D., F.R.C.P.E., Lecturer on Clinical Medicine, Edinburgh University. 4*s.* 6*d.* net.
Surgery. Part V. Third edition. (Catechism Series.) By Captain C. R. Whittaker, R.A.M.C. 1*s.* 3*d.* net.
Pathology. Part IV. Second edition. (Catechism Series.) 1*s.* 3*d.* net.

MASSON ET CIE, Paris.
Électrodiagnostic de guerre. Clinique. Conseil de Réforme. Technique et Interprétation. par A. Zimmern, Professeur agrégé à la Faculté de Paris et P. Pérol, ancien interne des Hôpitaux de Paris. (Collection Horizon.)

METHUEN AND CO., London.
Tuberculosis and How to Avoid It. By Clive Riviere, M.D., F.R.C.P. 1*s.* net.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 51.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 14th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 8	...	58	52	37	37	39	Overcast
,, 9	0·13	74	51	39	45	46	Cloudy
,, 10	0·05	61	45	42	41	43	Cloudy
,, 11	...	58	48	41	42	44	Fine
,, 12	...	59	52	40	42	44	Overcast
,, 13	...	49	47	40	41	41	Foggy
,, 14	...	61	54	40	46	46	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

A.—Mrs. E. Anderson, Donemana; Capt. B. H. S. Aylward, R.A.M.C.; Messrs. Abdulla and Co.; Lond.; Mr. H. W. Abbott, Lond.; Messrs. Armour and Co., Lond.; Messrs. Allen and Hanburys, Lond.

B.—Capt. J. C. Bharucha, I.M.S.; Dr. F. L. Benham, Port Adelaide; Messrs. Butterworths, Liverpool; Dr. L. W. Bathurst, Lond.; Dr. C. H. Browning, Lond.; Dr. S. C. Biswas, Lond.; Bangkok, Medical Officer of Health of; Dr. T. Bentham; British Red Cross Hospital, Netley, Registrar of; Mrs. Bury, Peel; Messrs. Butterworth and Co. Lond.; Messrs. Blinks and Sons, Ramsgate; Mr. J. Bellows, Gloucester; Dr. H. S. Bhalla, Mexborough; Capt. K. D. Bean, R.A.M.C.; Messrs. Boots, Nottingham; Mr. W. M. Bristow, Christchurch; Messrs. Burroughs Wellcome and Co., Lond.; Mr. H. Brown, Lond.; Mr. T. T. Baker, Lond.; Messrs. W. H. Bailey and Son, Lond.; Messrs. Chas. Birchall, Liverpool; Bradford City, Medical Officer of; British Red Cross Society (Suffolk Branch), Bury St. Edmunds, County Director of Voluntary Aid to.

C.—Mr. R. A. Craig, Shrewsbury; Dr. S. Churchill, Lond.; Dr. J. A. Cameron, Ipswich, Australia; Dr. G. P. Campbell, Falmouth, Jamaica; Commonwealth of Australia, Melbourne, Director of Quarantine; Dr. D. Chepmell, Worthing; Mr. G. Cooke, Lond.; Dr. A. C. Coles, Bournemouth; Dr. L. Cobbett, Cambridge; Miss E. Chaning-Pearce, Ramsgate; Mr. J. Cabburn, Lond.; Mr. H. Cooper, Lond.; Mrs. Crawford, Dublin; Mrs. Charles, Swanage; Chief Postal Censor, Lond.; Cambridge, County Medical Officer of Health of.

D.—Capt. J. Donald, R.A.M.C.; Dr. D. N. Datta, Muchikandi; Durham University College of Medicine, Newcastle-upon-Tyne, Sec. of; Dr. H. Doss, Calcutta; Duty and Discipline Movement, Lond.; Dr. H. H. Dale, Lond.; Mr. J. W. Dowden, Edinburgh; Mr. A. Doran, Lond.; Messrs. W. Dawson and Sons, Lond.; Duff House, Banff, Sec. of; Mr. D. Drew, Lond.; Derbyshire Royal Infirmary, Derby, Sec. of; Denver Chemical Manufacturing Co., Lond.

E.—Lieut.-Col. R. J. Elliott, I.M.S.; Mr. W. Easton, Jedburgh; Epsom College (London Office), Sec. of; Dr. J. Eyre, Lond.; E. J. T.

F.—Messrs. H. Frowde and Hodder and Stoughton, Lond.

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H.—Capt. G. S. Hett, R.A.M.C.; Messrs. J. Heywood, Manchester; Lieut. J. W. Hayes, A.V.C.; Mr. J. W. Harris, Bilston; Mr. J. T. Henderson, Pietermaritzburg; Dr. A. M. Hickley, Lond.; Messrs. Humphreys, Lond.; Holborn Surgical Instrument Co., Lond.; Mrs. L. Hopkinson, Lond.; Lieut.-Col. V. Hurley, A.A.M.C.; Hulme Dispensary, Manchester, Hon. Sec. of; Mr. G. Herbert, Bradford.

I.—Dr. M. C. Irwin, Lond.; Capt. A. C. Inman, R.A.M.C.; Mr. S. T. Irwin, Belfast; I. L. High-class Cigarette Manufacturing Co., Lond.; *Inverness Courier*.

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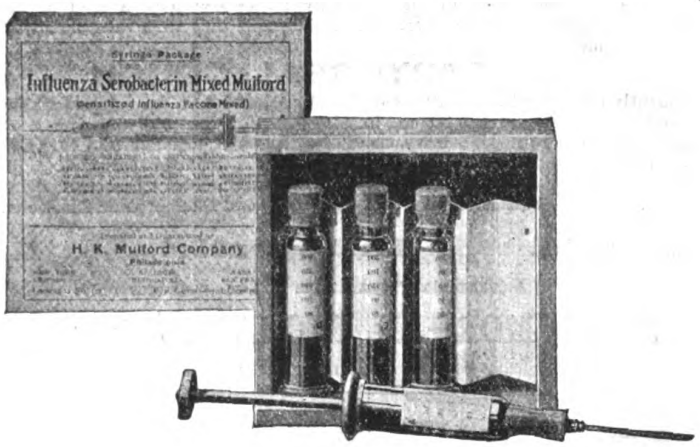
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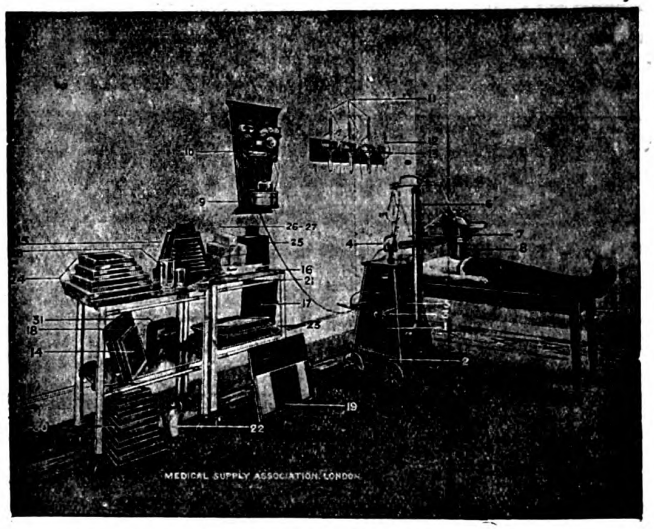
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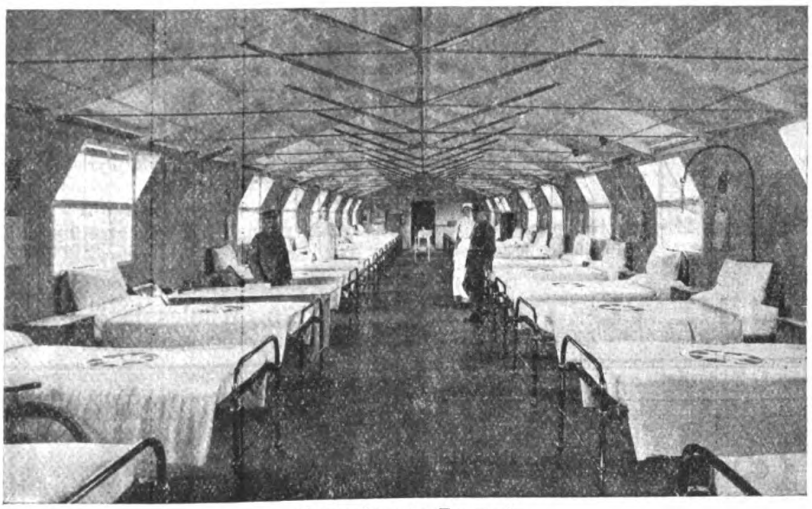
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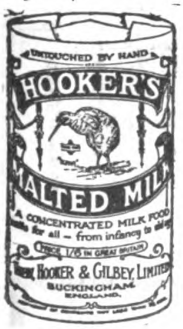
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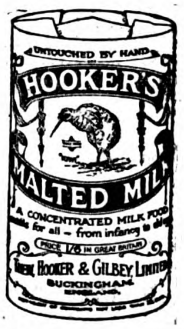


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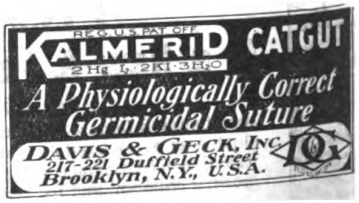
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STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

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Superior trained Male Nurses for Medical, Surgical, Mental, Dipsomania, Travelling and all cases. Nurses reside on the premises, and are always ready for urgent calls, Day or Night. Skilled Masseurs and good Valet attendants supplied.

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LIVERPOOL ROAD, ISLINGTON, N.

FOR THE TREATMENT OF NON-PAUPER PATIENTS SUFFERING FROM INFECTIOUS FEVERS.

Part of the cost is paid by the patient, the balance being found by the Hospital. There are a few private rooms, at 5½ guineas a week, payable weekly in advance. No aid is received from the rates. Subscribers domestic servants removed at small cost and treated free of charge.

For admission apply to the Secretary, W. CHRISTIE, Major.

MALLING PLACE, KENT.

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent.

Telegrams: ADAM, WEST MALLING
Telephone: No. 2 MALLING.

HEIGHAM HALL, NORWICH.

Telephone ***For Upper & Middle Classes*** 80 Norwich.

A Private Hospital for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with Special Attendants available. **Boarders** taken without certificates. **French Chef. Terms from 2 to 20 guineas weekly. Patients sent for.**

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A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church-Stretton

PLYMPTON HOUSE,

PLYMPTON, S. DEVON.

This old-established Licensed House offers every advantage that experience can suggest for the care and treatment of Mental Cases.

For terms, &c., apply to the Resident Physicians.

Telephone: No. 2, Plympton. Dr. ALFRED TURNER. Dr. J. C. NIXON.

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HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted.

For terms, &c., apply to the Medical Superintendent

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Terms from 3 guineas per week

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ESTABLISHED 1857. *NEW INSTITUTION COMPLETED* 1901.

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VOLUNTARY BOARDERS CAN BE RECEIVED.

Situated 1200 feet above sea level. Facing south, sheltered from north and east 14 acres grounds, tennis, croquet, golf, curling. Billiard rooms, theatre, workshop in house. Motor-car drives. Garage. Ten minutes from Pavilion Gardens, Baths, and L. & N.W. and Mid. stations. Seaside branch in N. Wales.

For terms, &c., apply to the Res. Medical Superintendent, GRAEME DICKSON, L.R.C.P., &c. [NAT. TEL. 130.

ST. ANDREW'S HOSPITAL

FOR MENTAL DISEASES,

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For the Upper and Middle Classes only.

President—The Right Hon. the EARL SPENCER, K.G.

This Registered Hospital is pleasantly situated in 118 acres of park and pleasure grounds.

Every facility is provided for cricket, football, hockey, croquet, lawn-tennis, bowls, golf, motoring, boating, and gardening.

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Patients paying higher rates can have special Attendants, Horses and Carriages, and Private Rooms in Villas in the Hospital grounds, or at

MOULTON PARK,

a branch establishment, two miles from the Hospital, where there is a farm of 473 acres, which supplies the Hospital with meat, milk, and other farm produce.

BRYN-Y-NEUADD HALL, LLANFAIRFECHAN,

the Seaside House of St. Andrew's Hospital, is beautifully situated in a Park of 331 acres, close to the Sea, and in the midst of the finest scenery in North Wales.

Patients can enjoy good cricket, lawn-tennis, croquet, golf, trout fishing, and bathing.

Patients or Boarders may visit this branch for long or short periods, and can have Private Rooms in Villas in the Park.

For particulars apply to the Medical Superintendent, St. Andrew's Hospital, Northampton. TELEPHONE No. 56.

THE GRANGE, Near ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.C. Railway, Sheffield. Telephone No. 34 Rotherham.

Resident Physician—GILBERT E. MOULD, L.R.C.P., M.R.C.S. Consulting Physician—CROCHLEY CLAPHAM, M.D., F.R.C.P.E.

Telegraphic Address: "Relief, Old-Catton." Telephone: "290, Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, near Norwich.

A High-class Home for the **Curative Treatment** of Nervous Affections. Situated a mile from the City of Norwich. **Special and Separate** accommodation is provided for those suffering from **Hysteria** and for cases of **Incipient Mental** trouble, who can be received as **Voluntary Boarders** without certificates and occupy their own private suites of apartments. A staff of experienced nurses has been organised to take charge of patients in their own homes. For terms, &c., which are moderate and inclusive, apply to the Misses MCLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., &c., Medical Superintendent.

THE MOAT HOUSE, TAMWORTH, STAFFORDSHIRE.

A HOME for Nervous and MENTAL CASES.

Stations: L. & N. West. and Mid. Railways.

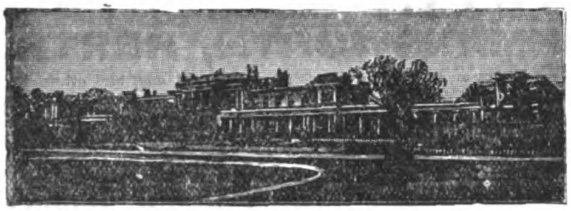
The House stands in grounds of ten acres (within five minutes drive of either station), and is devoted to the care and treatment of a few Ladies suffering from Nervous and Mental Affections, who enjoy the comfort, privacy, and occupations of home life. Voluntary patients are received without certificates. For terms, &c., apply to the Resident Licensees, EDWARD HOLLINS, M.A. Cantab., or (Mrs.) S. A. MICHAUX.

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A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.



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Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

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Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

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MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.
Other days by appointment.

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For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

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Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.

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An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

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Thirty years' Experience. Excellent Medical References.
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Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

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No patients under certificate of insanity can be received.

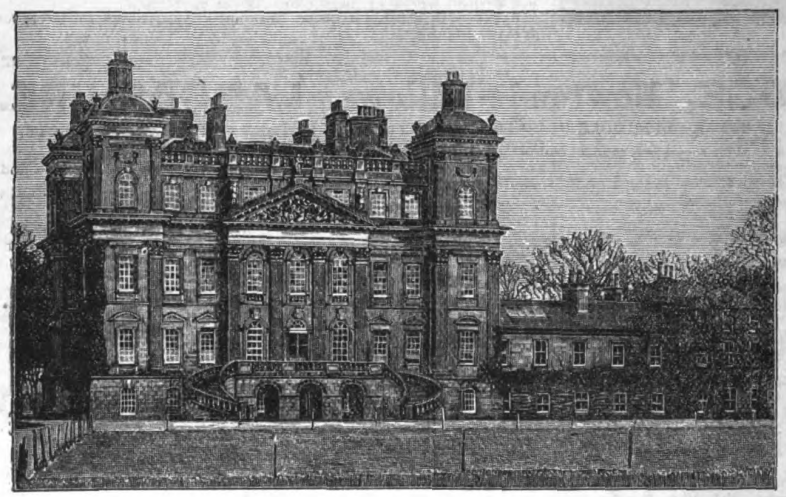
References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

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For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.
Telephone: 16 Rickmansworth.



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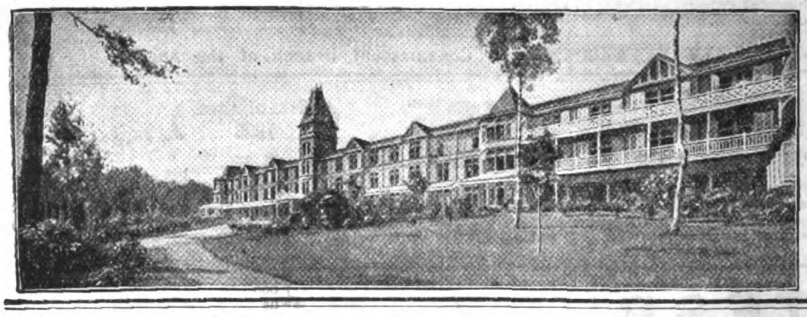
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

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Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

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(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

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This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
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TUBERCULIN USED ONLY FOR SUITABLE CASES.

WITHIN EASY REACH OF THE MOOR.

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For particulars, apply C. H. BERRY, M.R.C.S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford.

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Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

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MATLOCK. Established 1853.

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A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes. Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

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For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

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Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

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Private Home for Mentally afflicted Ladies; ten only received.
Terms from 4½ gns. weekly.
Apply, Medical Officer, or Mrs. Peele

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GREEN LANES,

FINSBURY PARK, N.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Mental and Nervous Affections. Highly situated, facing Finsbury Park.

Voluntary Boarders received without certificates.
For particulars apply to the Resident Physician.
Telephone No. 888 North. Telegrams: "SUBSIDIARY, LONDON."

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.E., the Med. Supt. [Tel. No. 307

Two Ladies (Nurses) would like Care of Elderly or Invalid Lady or Gentleman. Comfortable home, with every attention. Highest references.—Address, Misses Ringwood and Inge, "Iskdale," Langstone, near Havant, Hants.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtafold," Haslemere, Surrey. Telephone: 22 Haslemere.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

Associated Rooms, Private Rooms, or Suites. Very moderate terms.

Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.

Telephone: 494 Brixton

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City of Bradford.—Applications are invited for the position of Temporary ASSISTANT SCHOOL MEDICAL OFFICER. Salary 8 guineas per week. Apply, Medical Officer of Health, Town Hall, Bradford.

Rotherham Hospital.—Wanted, JUNIOR HOUSE SURGEON, Male, qualified. Salary £150, with board, lodging, and washing.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

Leicester Royal Infirmary.—A House SURGEON required. Salary £250 per annum, with board, apartments, and washing.

Applications to the House Governor and Secretary, Leicester Royal Infirmary.
12th November, 1917.

Royal Hampshire County Hospital, Winchester.—Wanted, an ASSISTANT RESIDENT MEDICAL OFFICER, fully qualified and exempt from Military Service. Salary £150 per annum, with board and residence.

Applications, with testimonials, addressed to the undersigned, to be received not later than the 20th inst.

EDWIN J. PEARCE, Secretary.

Resident House Physician.—Applications are invited for this post. Salary at the rate of £200 per annum, with the usual allowances. The appointment will be made for six months. Selected candidates will be communicated with. Apply, with copies of three recent testimonials, not later than November 27th, 1917, to the Secretary, HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. 3.

Hôpital Français, 172, Shaftesbury-avenue, W.C. 2.—Applications are invited for the post of ANÆSTHETIST, to share the duties with another.

Honorarium £25 per annum.

Candidates are requested to send their application, with copies of recent testimonials, to the Secretary of the Hospital on or before the 1st December.

Suffolk Hospital, Ampton Hall, near Bury St. Edmund's.—Wanted, ASSISTANT RESIDENT MEDICAL OFFICER for this Hospital, receiving direct convoys from overseas. Candidates (of either sex) must be ineligible for Military Service.

Salary £200 per annum, with board and residence.

Applications, giving full particulars, copies of testimonials, and stating qualifications, should be sent to the County Director, 1, Angelhill, Bury St. Edmund's.

Derbyshire Royal Infirmary, Derby.—There is a vacancy for a HOUSE SURGEON.

Candidates must be qualified and registered under the Medical Acts.

Salary £200 per annum, with board, residence, &c.

Male applicants should be ineligible for Military Service.

The Hospital contains 367 beds, of which 170 are reserved for Soldiers.

By order.
12th November, 1917. EDMUND FORSTER, Superintendent.

Nottingham General Hospital.—Wanted, a CASUALTY HOUSE SURGEON (Medical Woman). She will be appointed for six months. Duties to commence on the 1st of December, 1917. Salary to be at the rate of £250 per annum, with board and residence in the Hospital. Candidates are required to send testimonials, with particulars as to age, qualifications, and experience, to the Secretary. Applications must be delivered not later than the 22nd of November. By order.

E. M. KEELY, Secretary

Northern Infirmary, Inverness.—Wanted, a HOUSE SURGEON, Male or Female, for the Northern Infirmary, Inverness, including Phthisis Wards and Convalescent Home. To a registered Medical Practitioner with experience in the administration of Anæsthetics a salary of 3 guineas a week and 1 guinea additional as war bonus will be paid, with board, &c. The duties of the office include the dispensing of medicines for the in-door patients.

Applications, accompanied by testimonials (copies only), to be lodged with Mr. DUNCAN SHAW, W.S., Inverness, Hon. Secretary to the Institution.

16, High-street, Inverness, 10th November, 1917.

New Hospital for Women, Euston-road.—Wanted, Medical Women for the following posts:—HOUSE PHYSICIAN, OBSTETRIC ASSISTANT, TWO HOUSE SURGEONS (board, residence, laundry, and salary at the rate of £50 per annum).

RESIDENT MEDICAL OFFICER, House of Recovery, New Barnet (salary at the rate of £60 per annum).

These appointments from 1st January, 1918, for six months.

Medical Women are also required as CLINICAL ASSISTANTS and ANÆSTHETISTS. Particulars on application.

Applications, with testimonials, should be sent in by 28th November.

IMOGEN H. MURPHY, Secretary.

Warwickshire County Council.—ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.—Applications are invited for the post of Assistant County Medical Officer of Health (Male or Female). The duties of this officer include Medical Inspection of School Children. Salary £325, with travelling expenses. The officer must be prepared to devote his whole time to the service of the County.

Statement of the duties and forms of application may be obtained from A. BOSTOCK HILL, M.Sc., M.D., County Medical Officer of Health.

16, Northgate-street, Warwick, November 13th, 1917.

Bury Infirmary.—Wanted, a Junior HOUSE SURGEON (ineligible for Military Service), who must have both Medical and Surgical qualifications. Salary £150 per annum, with board, residence, and washing. Among other duties the person appointed will have charge of the Children's Ward, the Ophthalmic Department, Casualty and, Out-Patients' Departments, and the administration of Anæsthetics. Terms of appointment not exceeding nine months, then eligible for the Senior House Surgeon's post if suitable.

Applications, stating age and nationality, with testimonials and photograph, to be sent at once to the Honorary Secretary, Infirmary, Bury, Lancashire.

Northamptonshire Sanatorium, Creaton, near Northampton.—MEDICAL SUPERINTENDENT.—The Committee of the above Institution (for treatment of early cases of Tuberculosis) invite applications for the post of Medical Superintendent from gentlemen ineligible for Military Service. The salary offered is £300 per annum, rising on approved service to £350 by annual increments of £25. Furnished quarters, board, and laundry provided in the Institution.

Applications, stating age, qualifications, and previous experience, along with copies of three recent testimonials, endorsed "Medical Superintendent," should be sent not later than 21st November to the undersigned. A CLIFFORD TOWERS, Secretary.

Drury Chambers, Market Square, Northampton, 5th Nov., 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

The Milroy Lectures on State MEDICINE and PUBLIC HEALTH.

The Council of the Royal College of Physicians are prepared to receive applications for the office of MILROY LECTURER for 1919.

Applications must be addressed to the Registrar, Royal College of Physicians, Pall Mall East, on or before January 1st, and should contain a statement of the division of the subject selected by the candidate.

The course must comprise not less than "three" nor more than "six" Lectures.

The Lectures are to be given on Tuesdays and Thursdays in February or March, 1919.

A copy of Dr Milroy's "Suggestions" on the subject of his bequest, and information as to the emolument, may be obtained from

November, 1917. J. A. ORMEROD, M.D., Registrar.

Glamorgan County Council. MEDICAL INSPECTION OF CHILDREN IN PUBLIC ELEMENTARY SCHOOLS.

WOMAN MEDICAL OFFICER.

The Glamorgan County Council invites applications for the appointment of a Temporary Woman Medical Officer for the purposes of the Council's duties as Local Education Authority in the Inspection of Children in, and Medical Supervision of, the Public Elementary Schools, in pursuance of the Education (Administrative Provisions) Act, 1907.

The salary will be at the rate of £300 per annum, with travelling expenses

The person appointed will be required to give her whole time to the duties under the control and supervision of the School Medical Officer, and to reside where directed by the Committee.

Preference will be given to candidates who have (a) had an adequate training in State Medicine or hold a Diploma in Public Health, (b) had some definite experience of school hygiene, (c) enjoyed special opportunities for the study of disease in children, and (d) who are able to undertake refraction work.

A knowledge of Welsh is desirable.

Applications for the appointment, stating age and qualifications, and accompanied by copies of not more than three recent testimonials, should be addressed to the School Medical Officer, Dr. D. J. MORGAN, County Hall, Cardiff, and should be received by him not later than the first post on the morning of the 26th November.

Canvassing, personal or otherwise, will be a disqualification.

T. MANSEL FRANKLEN, Clerk of the County Council.

Glamorgan County Hall, Cardiff, 25th October, 1917.

Clare Hall Sanatorium.—Wanted, a Temporary ASSISTANT MEDICAL OFFICER. Salary at the rate of £250 per annum, with board, residence, and laundry. Applications to be made to the Medical Superintendent, Clare Hall Sanatorium, South Mimms, Barnet.

Temporary Assistant Medical Officers are required at QUEEN MARY'S HOSPITAL for CHILDREN, Carshalton, Surrey (under the Metropolitan Asylums Board). Salary £7 7s. per week, with board, lodging, and washing. Apply to the Medical Superintendent.

Chelsea Hospital for Women, Arthur-street, S.W. 3 (including Military Section).—Applications are invited for the post of RESIDENT HOUSE SURGEON and REGISTRAR, which is tenable for twelve months. Candidates must be qualified Medical Practitioners. Salary £200 per annum. Applications, accompanied by not more than three testimonials, must be sent to the Secretary by Friday, 30th November, at noon.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. — HOUSE SURGEON 1st January.

Six months' appointment. Salary £100 per annum, with board, residence, and washing.

Candidates should be doubly qualified, but applications from Fifth-year Students will be entertained. T. GLENTON-KERR, Secretary.
12th Nov., 1917. Telephone: Dalston 305.

London Lock Hospital, Dean-street, Soho, W.—The Board of Management invite applications for the post of HOUSE SURGEON at the Male Hospital. Candidates must be doubly qualified and duly registered, and be ineligible for Military Service. Salary at the rate of £150 per annum, with furnished rooms, full board, and washing. The appointment to be for six months. Duties commence January 1st, 1918. Applications, enclosing copies of three recent testimonials, to be sent to the undersigned at the Chief Offices, 283, Harrow-road, W. 9, on or before December 4th, 1917.

By order of the Board.
Chief Offices, 283, Harrow-road, W. 9. H. J. EASON, Secretary.

Wolverhampton and Staffordshire GENERAL HOSPITAL.—A HOUSE SURGEON wanted (Lady or Gentleman). The Hospital contains 262 beds (80 of which are reserved for the treatment of Soldiers), including the usual Special Departments, and is recognised by the various Examining Bodies for a part of the requisite attendance on Medical and Surgical practice.

Candidates must be registered under the Medical Acts.

The appointment is for six months, with a salary at the rate of £200 per annum, board, furnished rooms, and laundry provided.

Applications, with copies of testimonials, to the undersigned.
W. H. HARPER, House Governor and Secretary.
14th November, 1917.

British Red Cross Hospital, Netley.—Wanted, Medical Officer as ANÆSTHETIST. Applicants must be over Military age or physically unfit for Army service (and possess certificate of rejection by War Office). All applications, with testimonials, to be forwarded to the Registrar, British Red Cross Hospital, Netley.

Leopardstown Park, near Dublin.—Home of Recovery for Discharged Neurasthenic Sailors and Soldiers.—RESIDENT MEDICAL OFFICER. Salary £400 a year, with rooms, board, fire, light, and laundry. Successful applicant required to take course of instruction in the treatment of neurasthenia. Applications, with copies of testimonials, to C. A. PIM, Esq., 42 York-street, Dublin, before 1st December. Candidates must be of Irish birth.

Recuperative Hostels (for Sailors and SOLDIERS INVALIDED from H.M. SERVICES with NERVE-STRAIN), 43-45, Fitzjohn's Avenue, N.W. 3.—Wanted,
HON. NEUROLOGIST,
HON. LARYNGOLOGIST.

Also RESIDENT MEDICAL OFFICER, at a salary of £400 per annum, preference being given to applicants who have been invalided from the Services.

Applications to be addressed to The Secretary, The Hostel, 45, Fitzjohn's-avenue, Hampstead, N.W. 3.

Preston Royal Infirmary.—Wanted at once, a Fifth-year Student to act as RESIDENT MEDICAL and SURGICAL OFFICER. There is also another Senior Student in residence. Duties divided equally. Beds 138, with Out-patient Department, X-Ray and Electrical Department, and Pathological Laboratory.

Salary £120 per annum, with board, residence, and laundry.

Applications, stating age, qualifications, and experience, together with testimonials, to be sent to the undersigned from whom further information may be obtained. WALTER DAVIES, Secretary.
Secretary's Office, 5, Winckley-street, Preston.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals.—Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

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Surgical Instrument Manufacturers,
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6, GILTSPUR STREET, LONDON, E.C.1.
Telegrams: "Instruments, London." Telephone: 5240 City.

Wanted shortly, in South Wales Colliery Practice, an out-door qualified ASSISTANT. Salary £350 per annum, with comfortable furnished rooms, fire, light, and attendance. Work not heavy.—Address, No. 536, THE LANCET Office, 423, Strand, W.C. 2.

M.B. (Edin.) open for Temporary ASSISTANTSHIP, &c. Good recent references. Age forty-eight.—Address, No 532, THE LANCET Office, 423, Strand, W.C. 2.

Elderly Medical Man wants light Employment in small Asylum or Institution in return for hospitality, laundry, and rail fare.—Address, No. 533, THE LANCET Office, 423, Strand, W.C. 2.

A Doctor, aged 59, now disengaged, desires Employment. Advertiser retired after thirty years' private practice. Has lately been doing military work, now relieved by American surgeon.—Address, No. 534, THE LANCET Office, 423, Strand W.C. 2.

Medical Man, aged 40, medically rejected, wants light Appointment; not London.—Address, No. 535, THE LANCET Office, 423, Strand, W.C. 2.

Ex-Lt. R.A.M.C., 48, at liberty now for Locum, Institutional or General Work. Experienced, active, and good organiser. Address, No. 537, THE LANCET Office, 423, Strand, W.C. 2.

Lady Dispenser (Hall Certificate) desires Post. Excellent references.—Miss M. Puddy, "Holmwood," Park-road, New Barnet.

Lady requires post as Dispenser with Doctor or Hospital (part Hall Certificate).—Address, No. 532, THE LANCET Office, 423, Strand, W.C. 2.

Lady Dispenser, part Hall qualified (Chemistry and Practical), desires Post with Doctor. Country, near London preferred. Excellent references.—Lukin, 72, Oakley-street, Chelsea, S.W.

Secretary-Dispenser.—Woman, Hall qualification. Type writing, Books, care of Instruments, Dressings, Appointments. Disengaged 19th.—Address, Mrs. Andrews, Lancaster Gate Hotel, Lancaster Gate, W. 2.

Experienced Lady driver, with own 20 h.p. Coupé, would undertake West-End Doctor's work.—Box 4689, care of Judd's, 97, Gresham-street, E.C. 2.

Practices wanted with large Panels.—Messrs. LEE & MARTIN, Ltd., of 93, Hall-road, Handsworth, Birmingham, have many Clients on their books desiring the above.

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To Purchasers. — Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Thirty-six years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Strand, London, W.C 2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

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Country Practice.—£500 a year, great scope, near good Town in Lincolnshire. Panel £200. Large house and garden. Fruit-growing district. Vendor retiring. Price only £275.—Apply, No. 6171, care of Mr. Percival Turner, 4, Adam-street, Adelphi, W.C. 2.

Sussex.—A General Practice, situated in a Country Town, and producing about £1000 per annum. Small panel. Fees 2s 6d. upwards. Excellent house, with large gardens, &c.; rent £75 per annum. Premium one year's purchase or near reasonable offer.—*Quote* Folio 764, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Over £800 a year.—Hospital Town, within 100 miles.—Panel nearly 1000. Good corner house in Residential district. Fees from 2s. 6d. upwards. Great scope. Partnership introduction long as desired. Personally visited and investigated. Premium about £700.—Apply, No. 6183, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Berks.—An old-established General PRACTICE, situated in a good country district, and producing about £650 per annum. Panel list 470. Fees 2s. 6d. to 12s. 6d. Excellent house, containing four bedrooms, &c. Very large garden. Rent £56 per annum. Premium three-quarters of a year's purchase.—Quote Folio 989, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Death Vacancy.—Within 70 miles, in thriving Manufacturing Town of over 90,000. Income about £600. Panel 1000, and many better-class patients. Good house and large garden; rent £50. Established twenty-four years. Locum in charge. Will be sold for first reasonable offer.—Apply, No. 6202, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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£1300 a year. — Residential, good-class Suburb.—A very transferable PRACTICE for disposal, with nominal Partnership introduction as long as desired. Ill-health cause of sale. Panel over 500. Visits 2s. 6d. to 7s. 6d. Good detached house and garden. Personally investigated and recommended.—Apply, 6223, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

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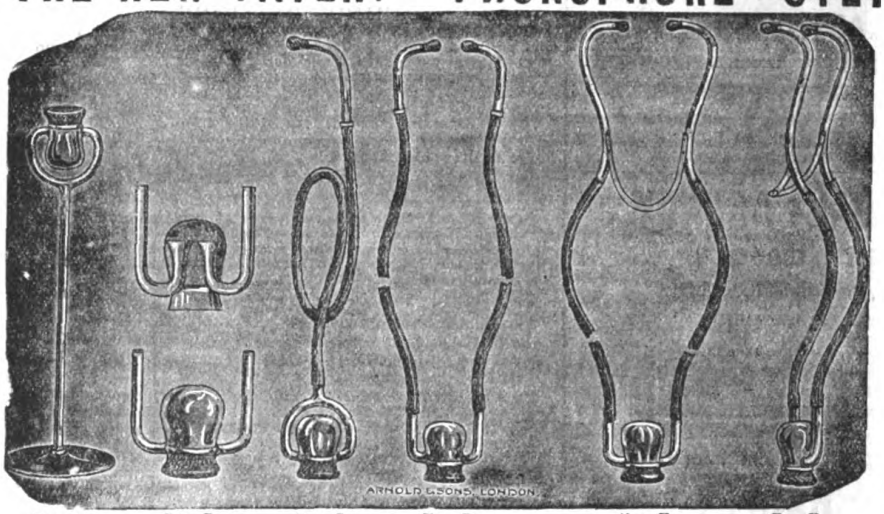


FIG. A. FIG. B. FIG. C. FIG. D. FIG. E. FIG. F.

The New Patent "Phonophore" Stethoscope (Fig. A.) 8/6

Ditto Chest piece (Fig. B.) 7/6

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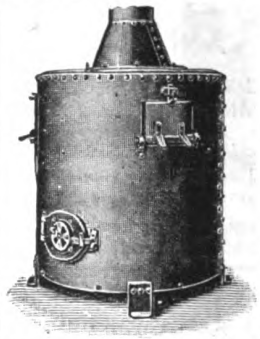
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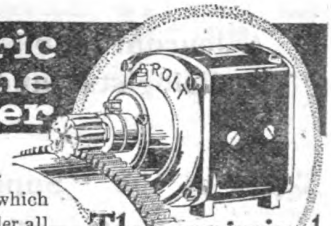
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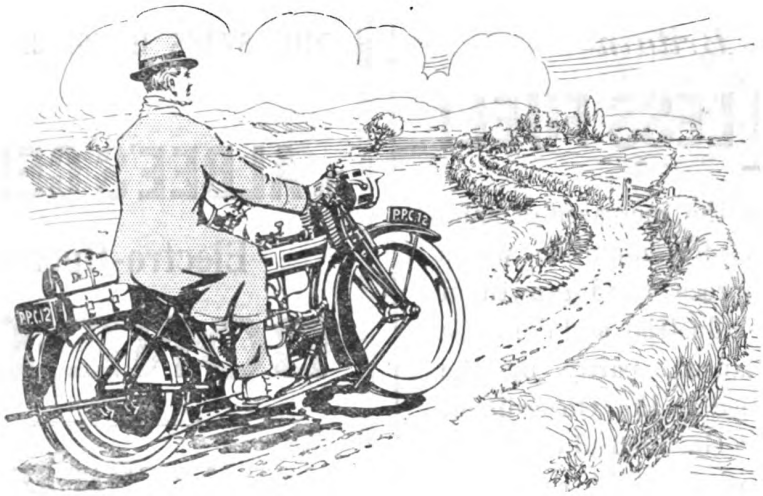
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Humphrey, Dr. F. W.	5	5	0
Humphreys, Dr. John	0	10	0
Hunt, Mr. S.	2	2	0
Hyatt, Dr. J. T.	2	0	0
Jacob, Dr. F. H.	10	0	0
Jacomb-Hood, Col. C. J., R.A.M.C. (T.)	5	0	0
James, Dr. Arthur	2	2	0
Jarman, Dr. Walter	5	0	0
Jeffries, Dr. Horace	2	2	0
Johnston, Dr. G. W.	1	1	0
Jones, Dr. H. C.	10	10	0
Jones, Mr. H. E.	2	2	0
Jones, Dr. T. E.	1	1	0
Jones, Dr. W. Black	1	1	0
Jones, Dr. W. Llewellyn	2	2	0
Joss, Dr. W. S.	1	1	0
Joy, Dr. Norman H.	3	3	0
Kendall, Dr. George	1	1	0
Kent, Dr. Norah	2	2	0
Kent, Dr. Wm.	1	1	0
Kenzil, Dr. A. E. W.	5	5	0
Kershaw, Dr. Edward	1	1	0
Kettle, Dr. G. H.	5	0	0
Kidd, Dr. Percy	10	10	0
Kinmont, Dr. P.	2	2	0
Knight, Dr. C. V.	1	1	0
Kyle, Captain H. G., R.A.M.C. (T.)	2	2	0
Lacey, Mr. Wm.	5	5	0
Laing, Dr. J. C.	2	2	0
Landman, Dr. J.	2	2	0
Latimer, Dr. H. A.	2	2	0
Leak, Dr. H.	1	1	0
Lee, Dr. C. S.	10	0	0
Leftwich, Dr. R.	1	1	0
Leiper, Dr. A.	2	2	0
Leslie, Dr. L. F.	5	5	0
Leslie, Dr. Murray	10	10	0
Lipscombe, Dr. A. A.	1	1	0
Liston, Dr. Mary F.	3	3	0
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Lloyd, Dr. W. F.	1	0	0
Lucas, Dr. J. W.	1	1	0
Luff, Lt.-Col. Arthur P., R.A.M.C. (T.)	5	5	0
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MacAlister, Sir Donald	5	0	0
McArthur, Dr. D. R.	2	2	0
McClintock, Dr. John N.	3	3	0
Macdonald, Dr. G.	5	5	0
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McKendrick, Mr. A.	1	1	0
Mackenzie, Dr. K. C.	5	5	0
Mackintosh, Dr. M. L.	2	2	0
Macmillan, Dr. C.	1	1	0
McOscar, Dr. J.	1	1	0
MacVicker, Dr. C. G.	1	1	0
Mallett, Dr. F. R.	2	2	0
Marsh, Dr. Charles A.	5	5	0
Martin, Dr. Robt. H.	1	1	0
May, Dr. Henry E.	5	5	0
Mears, Dr. F. C.	2	2	0
Miller, Dr. G. V.	5	5	0
Mills, Dr. H.	5	5	0
Milne, Dr. James A.	1	1	0
Milward, Mrs. Edith	50	0	0
Moir, Dr. Byres	5	0	0
Moore, Captain C. A., R.A.M.C. (T.)	3	3	0
Morgan, Dr. R. W.	0	10	6
Moreton, Mr. A. L.	2	2	0
Morris, Dr. A. L.	1	1	0
Muirhead, Dr. J. B.	5	5	0
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Needham, Sir Frederick, M.D.	5	0	0
Nicol, Dr. A. H.	2	2	0
Nobbs, Dr. Athelstane	1	1	0
Nock, Dr. W. W.	2	2	0
Owen, Mr. Humbert Cunliffe (per Mr. Owen Lankester)	100	0	0
Paterson, Major D. R., R.A.M.C. (T.)	10	0	0

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Pelley, Dr. A. M.	5	0	0
Pellier, Capt. C. de C., R.A.M.C.	1	1	0
Penrose, Dr. N. C.	10	0	0
Pernet, Dr. and Mrs. George	2	2	0
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Poole, Surg.-Major G. K.	1	1	0
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Rayner, Dr. Edwin	5	5	0
Renshaw, Dr. Adelaide	1	1	0
Reynell, Dr. W. R.	2	2	0
Richmond, Dr. Francis	1	1	0
Rivington, Dr. Eveleen B. G.	1	1	0
Robbins, Dr. T. W., sen.	1	1	0
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Roberts, Dr. E. A.	5	5	0
Roche, Dr. A. R.	2	2	0
Ross, Dr. S. J.	2	2	0
Rouquette, Dr. Stewart	5	5	0
Rusby, Dr. E. L. M.	1	1	0
Russell, Capt. A. E., R.A.M.C. (T.)	5	0	0
Russell, Dr. A. W.	1	0	0
Ryall, Mr. E. Canny	5	5	0
Sanderson, Dr. J. A.	1	1	0
Scarborough, Dr. Hilda	1	1	0
Scott, Dr. Gilbert	2	2	0
Scott, Dr. Thomas Bodley	5	0	0
Sealy, Dr. F. Marmaduke	2	2	0
Sears, Dr. C. Newton	2	0	0
Sedgwick, Dr. C. H.	1	1	0
Seymour, Dr. A. A.	1	1	0
Shackleton, Dr. W. Webb	0	12	0
Sharpe, Dr. C. S.	1	1	0
Sharpe, Lt.-Col. Wm. Salisbury, R.A.M.C. (T.)	2	2	0
Sharpin, Dr. E. Colby	5	0	0
Shears, Dr. C. H. B.	2	0	0
Shepherd, Dr. H. Bowman	2	2	0
Simpson, Dr. Garry	10	10	0
Smith, Dr. A. Wood	1	1	0
Smith, Dr. C. V.	2	2	0
Snell, Dr. D. M.	0	10	6
Soffe, Dr. W. E.	1	1	0
Solly, Dr. R. Vaughan	5	5	0
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Stephen, Dr. James	1	1	0
Stephenson, Dr. J. L.	2	2	0
Stewart, Dr. W. C.	1	0	0
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Stone, Mr. W. D.	2	2	0
Storrs, Capt. R., R.A.M.C. (T.)	2	2	0
Sugden, Dr. Frank	5	5	0
Swain, Col. James	50	0	0
Swan, Dr. J. S.	1	1	0
Taylor, Major H. H., R.A.M.C.	1	1	0
Taylor, Dr. James	10	0	0
Taylor, Dr. W. Bramley	3	3	0
Taylor, Dr. W. C. Everley	5	0	0
Thomas, Capt. F. G.	10	10	0
Thompson, Mr. George M.	25	0	0
Thompson, Dr. Harold	2	2	0
Thomson, Mr. C. B.	5	5	0
Thorne, Dr. R. Thorne	25	0	0
Thorp, Dr. Leonard	3	3	0
Thorpe, Major H.	2	0	0
Tidswell, Dr. H. H.	5	0	0
Tilley, Mr. Herbert	5	5	0
Tomkins, Dr. Harding H.	1	1	0
Tough, Dr. W. R.	1	1	0
Townsend, Dr. Arthur	1	1	0
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Tripps, Lt.-Col. E. V. O.	2	2	0
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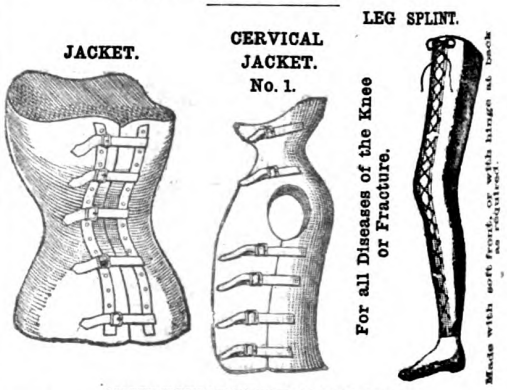
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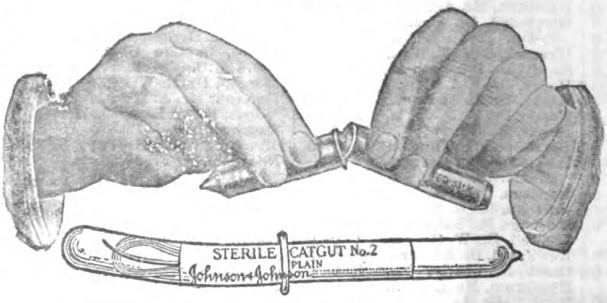
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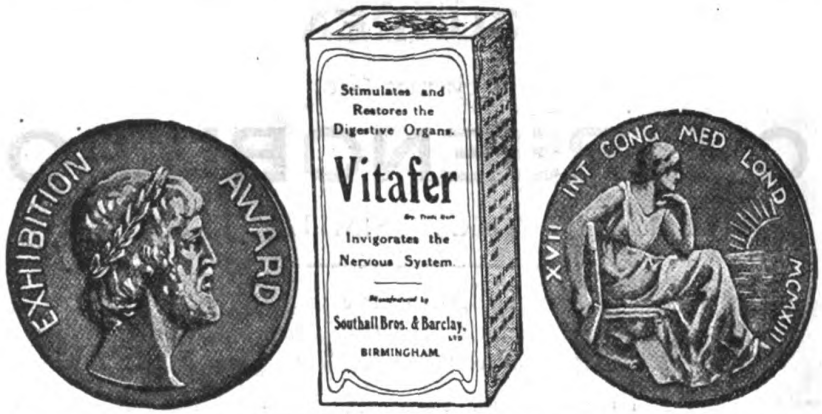
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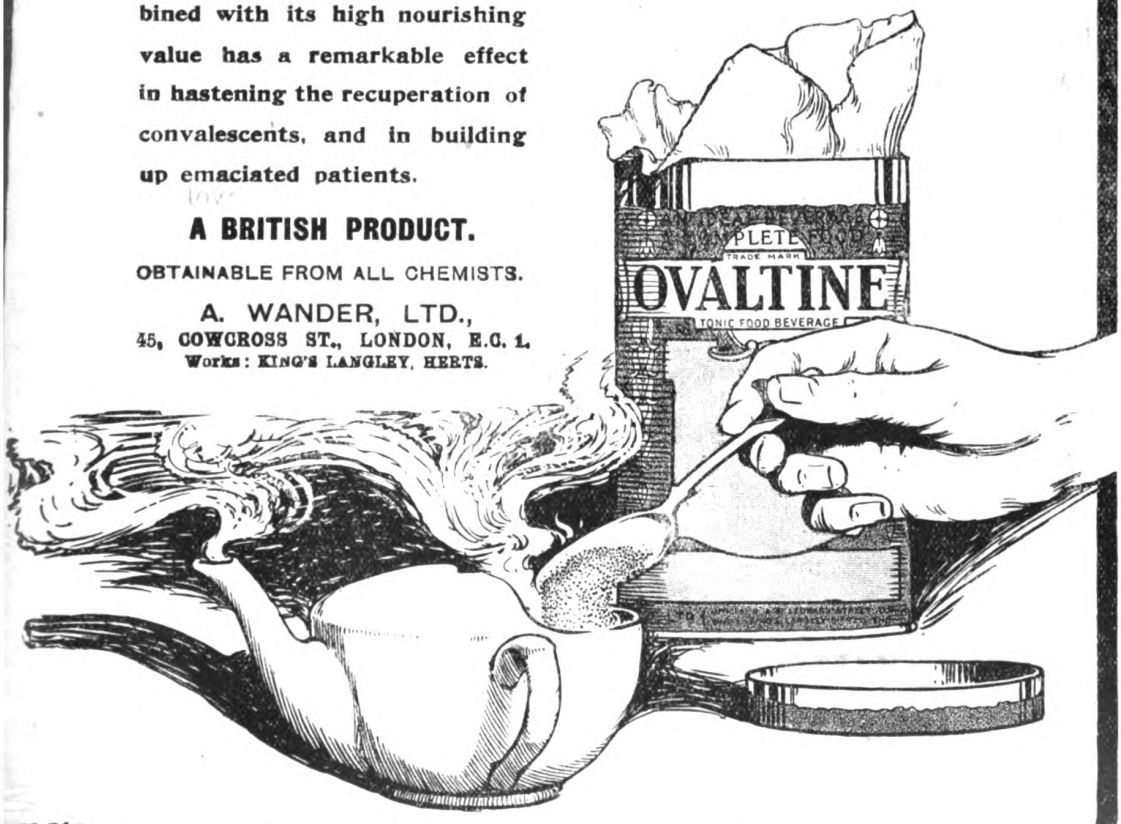
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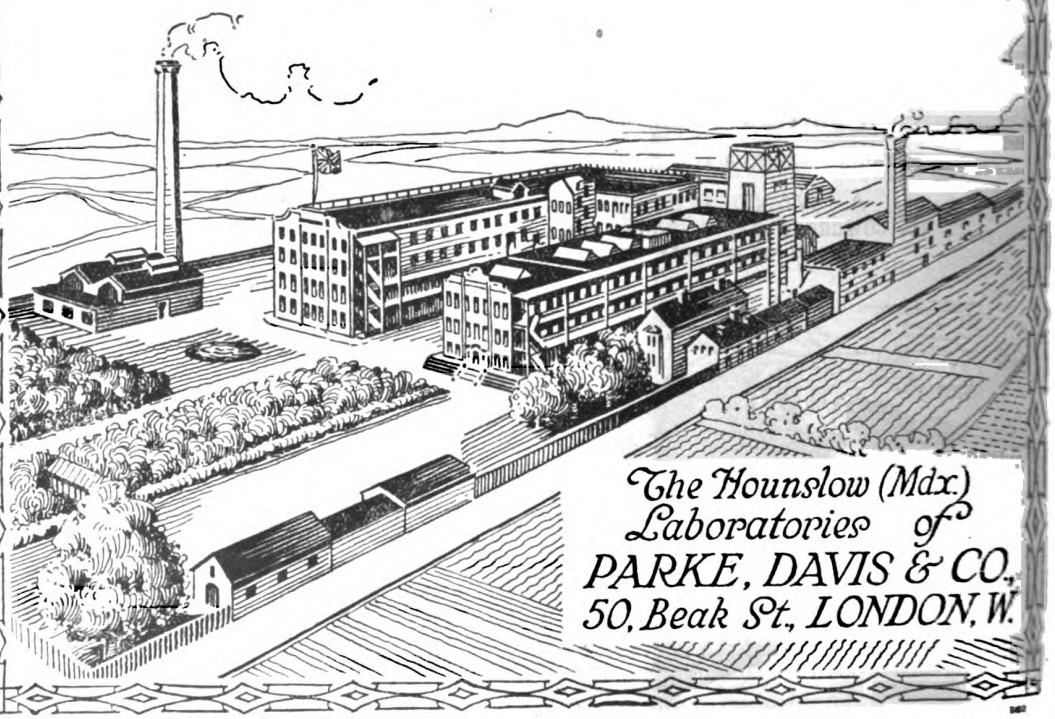
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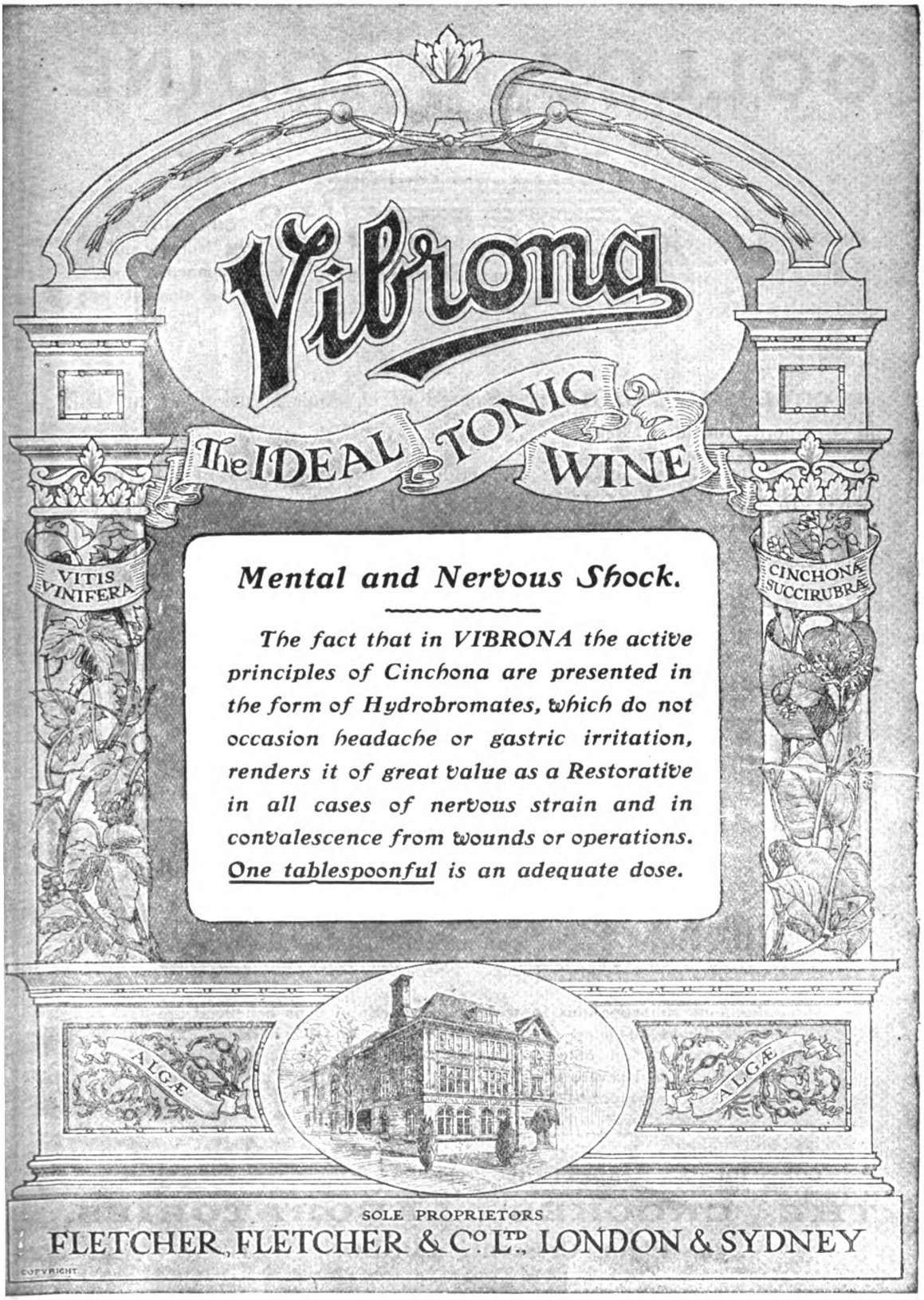
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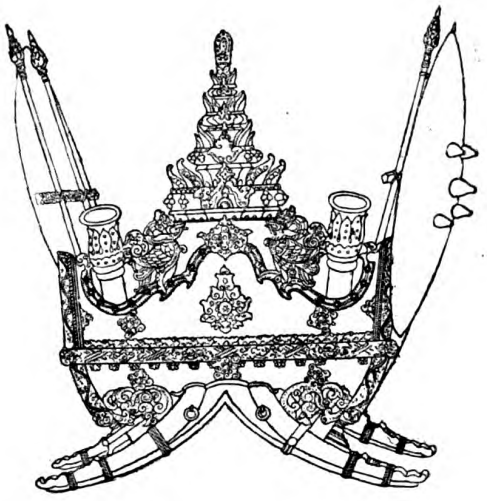
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Experiences IN COLONY TREATMENT AND AFTER-CARE.

By G. SIMS WOODHEAD, V.D., M.A., M.D., LL.D.,

BREVET COLONEL, A.M.S.; FELLOW OF TRINITY HALL AND PROFESSOR OF PATHOLOGY, UNIVERSITY OF CAMBRIDGE;

AND

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FOUNDATION SCHOLAR, ST. JOHN'S COLLEGE, CAMBRIDGE; HONORARY MEDICAL OFFICER, CAMBRIDGESHIRE TUBERCULOSIS COLONY, AND ACTING TUBERCULOSIS OFFICER FOR THE COUNTY OF CAMBRIDGE.

THE Cambridgeshire Scheme of After-Care having been in operation in its experimental or its completed form for a matter of two years, we have been urged to put together the experiences that have been gathered and some of the results that have accrued from its application in the area concerned.

RESULTS OF SANATORIUM TREATMENT.

Sanatorium treatment is at the present time on its trial. Insurance Committees all over the country have followed up with critical eyes many of the cases that have received treatment at various sanatoria. A few counties have their own sanatoria, and have been able to observe the results obtained from a patient's stay at such an institution for a matter of three months or so. It is only comparatively recently, however, that sanatorium treatment has been available for the working man of this country, and it is obvious that the results are not what we were led to expect. It is stated on very good authority that the results of sanatorium treatment vary according to the class of person treated, and that amongst the well-to-do the results of treatment are three times as good as are those obtained with the working man. Taken as a whole, then, it may be asserted with confidence that sanatorium treatment for the well-to-do is, and has been, a marked success, but that when applied to the working man the results have fallen far short of expectations.

We have therefore to consider the different factors which influence these results and profit, if we can, from the experiences of various sanatoria, especially those that have observed for some considerable time the records of their patients after they have received and followed up treatment. It is evident that the mode of life continued by the patient after he has received sanatorium treatment is of paramount importance. It is clear, moreover, that another important factor in the result is the length of time that has been devoted to that treatment; whilst it is evident that the unfavourable results which have been observed as following the treatment of the working man are due, in great measure, to the strict limitations of time which have been imposed by various Insurance Committees on the length of institutional treatment.

It would seem that the method of procedure had been somewhat as follows. A patient is selected for sanatorium treatment. Very often the disease is well marked, but notwithstanding this unfavourable feature the length of treatment is seldom, if ever, increased, but is strictly limited to the regulation period of three months. There can be no doubt that such a method of procedure is practically useless. This is self-evident when it is remembered that the man is now compelled to return to the surroundings in which he contracted the disease and is given little or no opportunity to carry out treatment which he obtained as a matter of routine at the sanatorium. It is obviously useless to instruct such a patient to "carry on" the mode of life which for three months he has been obliged to live, when in all probability he has now to return to a crowded street in which fresh air and sunshine are extremely limited and the food-supply absolutely inadequate.

The first consideration, therefore, before condemning sanatorium treatment as utterly worthless is, Is it practicable extend the length of the institutional treatment? It is clearly impossible, without unlimited funds at our disposal, to prolong sanatorium treatment as at present carried out. The expenditure of money on buildings would be enormous, and buildings, to say the least, can contribute but an infinitesimal amount to the real treatment of the disease. The essentials of successful sanatorium treatment have been demonstrated, repeatedly, to be of the simplest character, and for cases which are at all suitable for such treatment it is useless to expend money on bricks and mortar, glazed tiles, and parquetry floors, when all that is required is adequate shelter from inclement weather and the opportunity for the patient to engage in interesting and instructive work.

Causes of Failure.

Undoubtedly one of the great causes of the failure of our present plan of sanatorium treatment is the manner in which it is carried out. It cannot be gainsaid that the medical profession has been far too timid in the application of the principle of "work" in the treatment of the consumptive working man. The oft-repeated injunction that the man must be extremely careful, must avoid any exertion, and must keep himself in a state of perpetual fear of a sudden hæmorrhage has been carried to great extremes.

Again, it is obvious that if we desire to avail ourselves of the educational facilities of a sanatorium, we defeat our own ends when we erect elaborate buildings and equip and fit them up on the present lavish scale. A patient will quickly succumb to the idea that his "cure" is more a matter of architecture than the provision of fresh air, graduated work, and an adequate food-supply. It must be the experience of many medical men who have sent patients to sanatoria that on their return they have lost the moral courage to make a fresh start amid surroundings which, not really unhealthy, require but little adaptation and the necessary courage to be made entirely suitable for the reception of patients in whom the disease has been arrested.

Again, an institution in which the working man is educated to imagine that a life of ease is the one which he must hereafter enjoy is morally bad for the patient, in addition to which it involves a distinct loss to the general community to which he has to return and in which he will have to live and ought to work.

The patient returning home is thoroughly dissatisfied with his surroundings and refuses to make the effort which, in the interest of the man himself, it is of prime importance he should make. If this dissatisfaction led to a keen desire to improve his condition and that of his neighbours, much good might come of it, but as a rule the desire does not take this direction. It induces rather a feeling of depression, and the patient regrets that he is unable to enjoy the good things with which he was surrounded at the sanatorium, and without which, he has become convinced, his cure cannot be effected or completed, and it is with no feeling of encouragement that he attempts to restart his former mode of life. The gulf fixed is too great, and he realises, or believes that he realises, that without an adequate income he is powerless to start any system of reform.

To what authority can he possibly turn for help? A self-respecting man scorns the helping hand of charity, and in how many places in England and Wales can a consumptive be provided with a model cottage and suitable work to which to turn? There seems to be no single authority in the Kingdom by which these arrangements are made. Indeed, the greatest efforts put forth, so far, are those of After-Care Associations, which offer small doles of food or money to enable the man to return to some out-of-door occupation at which the wages earned are miserably low and the labour market extremely limited.

When we come to review the possible occupations for ex-sanatorium patients, it must be confessed that they are few in number, and that they are limited still more in that the number of employers who are willing to accept the services of an ex-sanatorium patient are few and far between, and will remain few until they become properly educated in this matter. An ex-patient then, having for three months tasted the joys of an open-air life surrounded by every care, receiving every attention, with every comfort ministered to, with little to do and supplied with adequate food, unfailingly despairs when he has to return to his own home and start afresh what he believes will be a losing struggle.

Direction of Treatment along Industrial Lines.

From all this it is clear that before sanatorium treatment is condemned in its entirety, some effort should be made to correct faults which obviously detract from its value. Taking into consideration these various factors the first line on which to make an advance is to alter, radically, sanatorium treatment and endeavour to direct it along industrial lines. If the treatment can be prolonged in such a way that the patient can be made to realise that he can work satisfactorily for a certain number of hours per day we shall have overcome one of the greatest obstacles to effectiveness that at present bars our way to further progress.

There are two ways in which this can be done. One is to prolong the actual treatment at the sanatorium, and the other is to provide suitable accommodation and give the working man an equal opportunity of carrying on the treatment in his own home: an opportunity enjoyed by his more fortunate rich neighbour.

It must be borne in mind, however, that if the treatment is to be prolonged in an institution it should be more carefully modelled on *lines* of useful and remunerative work. The working man objects very strongly—and naturally—to useless labour, which is not only useless but irksome, savouring of the treadmill rather than of the tonic.

He is quite ready to admit that labour is a necessary part of his treatment, but he is also ready to dispense with that form of treatment at the first available opportunity. Patients will readily, and with avidity, swallow gallons of obnoxious fluid in the form of medicine, but the appetite for irksome toil soon becomes nauseated. What is the remedy? Substitute for meaningless labour work in which the patients can take a keen interest. Stimulate them to take an actively intelligent interest in the task in hand, and as their working capacity becomes gradually restored let the patients receive a wage for the labour of their hands.

The problem of remunerative work both inside and outside an institution is one of the most difficult with which we have to deal and one not lightly to be discussed or put aside. On the one hand, however anxious one may be to stimulate the interest of the patient in the task he has to perform (and although the performance of that task is directly and distinctly for his own benefit) it must be borne in mind that various cracks soon become apparent whereby the man's labour may appear to leak into the gulf of exploitation. It is sometimes, nay frequently, felt by the working man when he is called upon to perform various sanatorium tasks that, willy-nilly, he is being imposed upon, that the labour is not only not for his particular benefit but is being exploited by the institution as a means of obtaining free labour. That certain working men have these ideas there can be little doubt, but we cannot accept it that they are those of working men, who have enjoyed the advantage of treatment at a sanatorium, as a class. Nevertheless, if such a feeling exists, it will soon spread, and its extension will seriously prejudice the good to be achieved by such institutions. It is our duty as far as possible to remove these erroneous ideas, and it is necessary for us to place ourselves in the position of these patients and look at the problem from their point of view.

In our work we immediately came into collision not only with a friendly society rule but also with the law, which states that no man may be in receipt of sick-pay whilst he is engaged in remunerative work. In Cambridgeshire, however, we have been fortunate in the formation of the After-Care Association through the action of which this apparently almost insuperable difficulty has been overcome, so that the road is now clear for the reformation of institutional treatment on colony lines.

THE PROBLEM AS VIEWED BY THE WORKING MAN.

In order to obtain light on the outlook of the working man on some of the above points it has been the practice to give to each patient coming into the Bourn Colony a set of questions with a request that he will answer them as fully and as frankly as he can, the object being to obtain a picture of the man's state of mind and to gain some idea of how the problem presents itself to him. Here are reproduced two sets of answers from patients having widely different outlooks on life. One of these men was an ex-employee of a large Glasgow firm of engineers, the other a traveller for a firm of engineers. The answers are here given exactly as put down, and are instructive as showing how clearly the difficulties of the problem of after-care is grasped by the "working man."

Views of an Engineer.

Question 1: Would you be prepared to accept a situation in the country after your treatment at the colony has come to an end?—Answer: If strongly advised by the doctor, yes.

If the country is more suitable than the town for the ex-patient it follows that in the majority of cases the patient would accept with good grace the inevitable, although to do so strong prejudices might have to be overcome; but in answer to—

Question 2: What conditions of employment would you consider satisfactory?—Answer: Suitable employment must be found, and the question arises: Can sufficient employment be found of a suitable nature for the number of people suffering from tuberculosis? This must not be taken as want of faith in the doctor.

To make it quite clear take my own case. Up to the commencement of my illness I was in the regular employment of Messrs. Barr and Stroud, Glasgow, at whose shops the conditions are far in advance of any engineering firm in the U.K. Good wages were paid, and the writer was given 1*s.* per hour for a 50-hour week; all time over this was paid for at the rate of 1*s.* 6*d.* Engaged as a tool maker, I was eventually given the position of a brading hand on a milling machine. The wages of the brading hands have been advanced during the last nine months.

As this shop is in a large city returning to it is out of the question. Would a man who has been used to good working conditions with fairly good pay accept a job in the country—say light work on a farm at 18*s.* a week with cottage? I think not.

A mechanic might be advised to take up motor-driving, but how many people realise that to pay a mechanic 40*s.* a week with a cottage is cheaper in the long run than a handy man at 25*s.*?

The writer would require a situation with regular hours, one half day a week, no Sunday work, with fairly good pay, and some prospects of advancement.

A situation hard to find. Then what work is there for this class of tuberculosis patient? I do not know; therefore it is impossible for me to answer the question of working conditions.

Question 3: Would you desire a temporary or a permanent situation?—Answer: Permanent. Age is a large factor which enters into the choice between a temporary and permanent situation. A married man or one with the intention of being married finds it undesirable to keep changing his mode of living and the manner of getting that living. Again, of what use is a temporary situation to an ex-patient? As soon as that employment ceases he is again looking for another job, and in the meantime what is to become of him? His resources, if any, would soon be at an end, and in a very short time his position is worse than before the commencement of his treatment.

Question 4: If not, state the reasons which influence your decision?—Answer: Not applicable.

Question 5: If a situation were found for you (at your own particular job) and you were in close touch with the Colony or similar institution, what conditions of employment would you consider satisfactory?—Answer: Were the treatment to last for a long period on the colonisation system, and the patient put to work at his trade or to do work of a marketable value, I do not think any other conditions could prevail except those as between employers and employees.

Take a carpenter from Cambridge, where the rate of 11½*d.* per hour is paid, give him three years' treatment, during which time he has an average of 280 working days in a year, doing each day four hours work. Can it be expected that he should do a work value of £42 and receive nothing in return? This is taking very low figures, because it is more than probable that he would work eight hours a day during the last year. For the married man this would be impossible, unless his family were provided for.

A man must be allowed to retain his self-respect, independence, and liberty as far as the treatment will allow; this he can do only if he is paid a living wage for his work. I do not think many men would accept voluntarily treatment under any other conditions.

Could they be compelled? I certainly think their friends would have something to say. This would matter little if there were only a few cases of tuberculosis, nor do I think that the voice of the trades unions should be overlooked or underestimated. Would they stand by while a large number of men were put to work at various trades all over the country at wages below the general rate or no wages at all?

The cure of tuberculosis is of greater national interest than individual interest, therefore the State should make adequate provision for its treatment, also for the patient after treatment has ceased. The writer may be accused of being selfish and asking too much, but it must be remembered that the working man finds it next to impossible to help himself, he cannot create work of a suitable nature, but must return to objectionable surroundings and ultimately be a source of danger to other people; therefore, is it too much to ask that provision be made for him?

I have wandered far from the point, but probably the questioner will be able to sift from these scrapes of the pen some sort of answer to his questions. For what they are worth I should like to make one or two further remarks on the last question.

If a system of colonisation were started and it was thought necessary in the case of a married man to remove his family into the estate it would, of course, be necessary to give the family circle some advice. This should as far as possible be done by the medical officer. Visits by lady health visitors are not, as a rule, appreciated by the better educated of the working classes, and the whole thing is aggravated by the fact that public bodies usually appoint maiden ladies to these positions, and however well trained they do not understand the intricacies of the domestic hearth.

Where a large estate and a large number of patients are being dealt with it might not be desirable for a patient to occupy a shelter during the later stages of his treatment. For a single man boarding out on the estate institutions might be provided.

Where the former was in vogue I think the patient should be allowed a certain amount of discretion in the choice of place, as personally I should strongly object to board where there was tuberecular trouble. Where institutions or such like are resorted to they should be designed with a view to giving each patient one place of privacy.

L. P., Bourn Colony, November, 1916.

Views of a Traveller for Engineering Firm.

Question 1.—**My *answer* is in the affirmative, in view of the fact that the health of myself and family would benefit in consequence.**

Question 2.—Answer: In my particular case it seems rather a difficult problem to find suitable employment in the country village, as such places do not offer many opportunities to the commercial man who has received training appertaining to city requirements, so that I am of the opinion that one could not lay down any stipulations regarding the nature of the work desired, but simply state as the only conditions that one were given a fair wage in order that a good education could be given one's children (which matter I refer to in a later paragraph) and to enable one to live in respectable circumstances.

Question 3.—Answer: This opens up rather a difficult problem in the case of the married man, as having a wife and family dependent upon one, one most naturally desires to obtain employment of as permanent a nature as is possible under ordinary circumstances, although I would state at this juncture that I am not foolish enough to imagine that any employment is absolutely permanent, as neither employer nor employee can foresee what circumstances may present themselves which would necessitate one relinquishing the duties one was fulfilling. Nevertheless, I would certainly wish to enter into an agreement whereby my services would be retained so long as I continued to fulfil my duties to the entire satisfaction of my employer.

Question 4.—Not applicable.

Question 5.—With reference to that question, I am convinced that to answer it fully one would be required to state one's views under various subheadings; therefore I propose to do this as follows:—

(a) *Mode of living.*—I mention this first, as I consider it the most important factor in dealing with this question. One must bear in mind the fact that this scheme is intended for persons who with ordinary care and few exceptions will be in a position to carry on their daily life as heretofore. Therefore I am fully convinced that the married man will wish to have his own private dwelling in which he may live with his wife and family. Hence this is the first and most important condition I would lay down before entertaining the idea of taking one's position in connexion with this scheme.

(b) *Nature of employment.*—I think that difficulty would arise in finding employment for some men, as in my own particular case a tuberculosis institution does not offer any opportunities for one of my calling, therefore the only alternative would be for me to accept a post of a different nature from that which I followed previous to joining the Army.

I do not consider it necessary at the moment to expound one's qualifications, but I would, under the circumstances, be prepared to consider any position of trust on the organising, administrative, or secretarial staff if such were offered me, if some mutual agreement could be arrived at concerning remuneration, which question I propose to deal with next.

(c) *Remuneration.*—In dealing with this question one cannot state anything definite in view of the fact that one does not know what position one would be offered, therefore one must consider to what extent one would be prepared to make financial sacrifices in order to have work and general surroundings of a favourable nature, thereby retaining that most valuable asset "good health" and also to be of economic value to one's country.

One wonders why any ex-soldier should be called upon to make financial sacrifices, when one considers that the disability from which he is suffering has been caused solely through military service, as one hears of endless committees, &c., being formed to assist, train, and find employment for ex-soldiers who have lost limbs, &c., and also to give financial assistance to dependants whilst undergoing training for a new calling if the soldier's income is reduced through such incapacity, yet the discharged tuberculous soldier is left to struggle on on probably half the income of pre-war days.

I have no doubt that the time has come when this question will have to be faced, and I fail to see why some post in connexion with a sanatorium or similar institution could not be offered and the salary supplemented by a permanent pension, thus making his income near that which he was in the habit of receiving before his patriotic instinct took him to the recruiting office, full of health and energy.

I venture to think that the reader may think my remarks are sentimental, but I feel I cannot find words to express my feelings of indignation towards those responsible for the welfare of the discharged tuberculous soldier.

(d) *Education of children.*—This point must not be overlooked in accepting any post in connexion with the scheme.

It was my ambition in pre-war days to endeavour to attain some position which afforded remuneration sufficient to allow one to devote a sufficient sum of money to this matter, as I consider it most essential that one's children should be given an opportunity of receiving a sound education, and therefore I should not consider the country village one of the best places to receive same. I have no doubt, however, that some arrangement might be arrived at whereby one's children could be sent to a boarding school if one's income were sufficient to defray expenses.

I now close, trusting that the foregoing remarks will be received in the spirit in which they are penned, my endeavour being to offer some suggestions which would allow the discharged tuberculous soldier to become a national asset instead of a danger and an encumbrance.

A. H. C., Bourn Colony, August 18th, 1917.

Consideration of Above Answers.

These answers to the questions submitted bring out one or two points which are well worth considering. One is the very important fact that both patients realise how essential it is for their recovery that they place themselves for some considerable time under conditions insisted upon by the After-Care Association. They do not hesitate about this; any hesitation, as illustrated by these two particular examples, and all are practically unanimous on the point, is due to the fact that no concrete proposals are ever placed before the men. It is, as Paterson has repeatedly said, the height of folly to say to these men, "You must find a light job in the country and carry out the treatment there." Would anyone in his senses make such a remark to a well-to-do patient? Of course, the answer is "No," and the patient is advised to live under conditions which you know are within his reach. The only difference is that the well-to-do patient has, at his own expense, the opportunity to live under these ideal conditions—conditions not available in the case of the working man, and as in the case of the tuberculous soldier, so with the tuberculous civilian working man, an opportunity should be given him to follow out medical instructions under improved conditions. The generous pension given by the State to tuberculous soldiers will, if properly handled, be the means of establishing the principle of "equal opportunity," a valuable phrase, but hackneyed from its frequent repetition in another sense.

Provided that the surroundings are healthy and adequate the patient may be allowed to return home, but he should then be followed with a course of after-care, which ensures that he is provided with an adequate food-supply and that the conditions under which he lives, and the rooms and shops in which he works, are not obviously undesirable and unhealthy.

CAMBRIDGESHIRE AFTER-CARE SCHEME.

The following are the lines on which the Cambridgeshire After-Care Scheme has been inaugurated, and, working in close coöperation with the Colony system, good results have been obtained and still better are confidently anticipated.

The Cambridgeshire After-Care Association was formed for a very special purpose. It was designed to help such cases as presented certain favourable features—so to assist patients that the benefit of sanatorium treatment might be considerably prolonged, it being hoped that the great gulf which was fixed between sanatorium conditions and those of ordinary life might be bridged over with some degree of success at any rate.

In any scheme of after-care it is obviously useless to treat all cases as if they were identical. The difference existing both as to the extent of the disease and the resistance which the patients offer to the spread of the disease, as well as their social conditions, working conditions, and a great number of other conditions, must be studied separately.

Cases of tuberculosis are divided into three categories. Early cases, which are most favourable for sanatorium treatment; middle cases, which, as a rule, are not so favourable; and advanced cases.

Gradual Return to Suitable Work.

In the first category after-care is designed to place the patient in such favourable conditions that the maximum amount of benefit may be derived from a stay at a sanatorium, *and that such benefit shall not be wasted when the man returns to his former occupation.* Again, after-care in this group is designed to enable certain of the patients to take up more suitable occupations than those on which they were engaged when they contracted the disease. The working capacity of such patients varies greatly, but as a rule a large proportion of them can be allowed to work for almost, if not quite, a full working day. It is really a question of time and grading, for in many cases if the work is resumed gradually the patient adapts himself to full work more readily and for a much longer period than if he is at once plunged into full work on his return from a sanatorium.

The principle which has been taken advantage of in the Cambridgeshire After-Care Scheme is that which allows a patient gradually to resume his former occupation, if this is suitable, under conditions as nearly ideal as possible. The great dividing line which separates the working man from his more fortunate neighbour is that involving the presence or absence of the opportunity of gradually resuming a former occupation after treatment has been carried on for a considerable time, during which time the patient has had to lead the life of an invalid. A well-to-do man never thinks of returning to a full day's work immediately on his return from a sanatorium. He takes up his tasks very gradually. He has no anxiety as to his financial position, and has no difficulties about the provision of an adequate food-supply for himself and his family. He has ample opportunity of taking long rest-periods, and any danger of over-fatigue is entirely eliminated.

Until the Cambridgeshire scheme was inaugurated the working man patient had no opportunity of restarting under similar conditions. If he dared to graduate his work the resulting financial loss crippled him and his family so

severely that in a very short time a great reduction in his food allowance was inevitable. The only other course open to him was to forfeit his independence and become dependent for help upon some charity or similar organisation. When he resumed his occupation, to whatever small extent, the contribution he received from his Friendly Society, part of which came from the State and part from the private side of the club, was immediately withdrawn, and left without any visible means of support he was forced to plunge into the turmoil and strife of competition to earn, if possible, enough to support himself, his wife, and his family.

We have previously noted that it has been stated on the highest authority that the chances of recovery of a well-to-do person are three times as great as that of a working man, the only apparent difference between the two being that the rich man has an opportunity of gradually resuming his employment—employment of a suitable nature, whereas the poor man has to return to unsatisfactory work for unsatisfactorily long hours—*at once*.

Is it not now desirable that some definite arrangement should be made for the continuance of pensions for some time after the patient is, superficially, fit for work? At present a pensioned tuberculous soldier is called periodically before a board convened to revise his pension. He is there questioned as to how long he can work and how much he can do, and according to his answers his pension is continued or curtailed. Here, surely, is a weak strand in the rope of our scheme; no particulars are, as a rule, furnished by the institution in which the patient has been treated or trained as to his working capacity or as to the extent of the progress of the disease as determined by continuous observation of the doctor in charge.

After a necessarily cursory examination the patient's pension may be reduced just at a time when plenty of food and further encouragement are required to bring the case to a successful issue. If these pensioners are to be induced to work in our farm or training colonies, we must understand that no board will, without consulting the colony physician or the tuberculosis officer in charge of the patient, reduce a pension too rapidly.

It would certainly be a move in the right direction if in cases of tuberculosis reports and suggestions from sanatoria or colonies in which the patients reside could, as a matter of routine, be forwarded to the boards before which these patients have to appear, or that consultations should take place between the pensions boards and the medical officer in charge of the area—the tuberculosis officer, who, usually, is the only person capable of giving a complete and satisfactory return, &c., of the progress of the case and the working capacity of the patient.

The Cambridgeshire scheme, then, was founded with the object of overcoming this fundamental drawback, and we think that the time has arrived when it may be well to publish the results which have already been obtained and to indicate the lines upon which the desired ends have been attained.

Outline of Scheme.

The After-Care Association is composed mainly of members of the various Friendly Societies operating in the county, and is essentially, in every sense of the term, a democratic institution. Each society has its Lodge or Court in every town or village in the administrative county in which the association works, and is represented on the association by a certain number of members. It is clear that the county is divided for this particular purpose into very definite areas, each area having a representative in touch with the local conditions, and having personal knowledge of every member of the particular Lodge or Court. The advantage of such a connecting link between insured persons and the association is of inestimable value, as it is clear that without such personal touch and supervision there is a great danger that the malingerer may escape detection. The arrangement arrived at, however, renders it difficult for the medical adviser in charge of the scheme to be deceived by the applicant for the grant, and, what is even more important, enables a personal local touch to be maintained between the medical officer and the patient.

In this scheme grants are made on the recommendation of the medical officer of the association—the tuberculosis officer. Applications are often countersigned by the general practitioner in charge of the case. There are therefore very efficient safeguards from a medical point of view that the applicant is a suitable case for the operation of the after-care scheme, and it is obvious that no undue pressure can be brought to bear upon the two medical men to authorise the expenditure of the funds of the association, except to the best advantage. Moreover, as explained in the previous paragraph, a very effective check is maintained by the local secretary, who, as a rule, is a working man well versed in local conditions, with a knowledge of the personal needs of the patient and of the desirability or undesirability of assisting the patient in the way to be explained presently. The association works, then, with a central executive committee, with the medical officer as honorary adviser, and through a series of local Lodges. The personal element is thus utilised to its fullest extent, whilst the knowledge available from these various sources is used in advancing the interests of the patient and at the same time in safeguarding those of the association.

The association pays by cheque certain amounts, which may be varied from time to time, according to the needs of the case. The sum expended is, as a rule, equivalent to that which a patient would forfeit under ordinary Approved Society arrangements when he passes off his club and starts his ordinary work. When a man returns from a sanatorium and it is found that he can resume his former occupation as suitable, the employer is communicated with, sometimes by the secretary of the association, or more often by the medical adviser, the graduated work scheme is explained to him and his help is sought. It has been found that when the matter has been fully explained to them the employers in the county are very sympathetic towards the scheme and are willing to help in any way they can. It has been made a matter of principle to accept as little as possible in the way of monetary grants from the employers concerned; this is important, as it is desirable that they may not have an idea that they are acting as philanthropists. The only concession they are asked to make is that the men may be allowed to work for them in the manner and under the conditions presently to be explained. It is made clear that according to his strength the man should work at first, say, four or six hours a day; and the employer is expected to see that the patient receives the ordinary trade union rate of wages of the district for the number of hours he actually works. This arrangement has been found to work very satisfactorily in the area concerned, although some employers have expressed doubt as to whether such an arrangement could become permanent, especially in times when labour is plentiful and when it would not be difficult to get as much labour as is required at full-time work. Whatever may be the danger of this difficulty arising in the future, up to the present it has not presented itself.

A Typical Case

Let us take a typical case—that of a farm labourer who has passed through a course of sanatorium treatment.

The man working for a farmer for four hours a day will receive for that four hours the ordinary rate of wages payable for that time in the district. He will thus receive 10s. per week from his employer. This will be supplemented by the After-Care Association with 10s. per week, the amount of sickness benefit the man forfeits by undertaking to work and so coming "off the club." It has been found that as a general rule a man is quite willing and anxious to work the prescribed shorter hours under these conditions, for he feels that he is thus carrying out to the letter the treatment which he receives at a sanatorium.

The man is in the meantime kept under careful observation. It is usually possible for him to present himself for examination at the dispensary at the end of three weeks. A report is furnished by the health visitor as to home conditions; the local secretary is satisfied that the man is endeavouring to carry out instructions, and if his condition is found to be satisfactory the period of work is increased by two hours per diem for the next three weeks. The man now receives a bigger wage, but the "sickness benefit" is kept at the same figure in order that he may be encouraged to continue to earn the larger wage when he knows that his perseverance will not be prejudiced by the premature cutting down of the allowance from the association.

Another examination is made at the end of a specified time, and if things are again found to be satisfactory the man is encouraged to put in full time, the allowance from the association being maintained as before. This places the patient in an extremely favourable position, coinciding with the period during which, exerting himself to the utmost, he has reached his maximum working capacity, when

too, his food allowance is also at its maximum—the most critical time of the convalescence. The allowance from the association cannot, of course, be permanent, but it is continued for a period varying according to the case, until it is quite clear that the man has got used to working full time and has become re-accustomed to his former surroundings. Then in a succession of 21-day periods the allowance is reduced by 2*s*. 6*d*., so that at the end of another nine weeks the man ceases to receive anything from the After-Care Association, and has returned to a position of absolute independence.

It is our experience that on these terms and under these conditions the man readily resumes his former work. He is spared the plunge straight into work-a-day conditions which he would have to have made if the association had not assisted him, and this at the most critical period of his treatment. The way is made easy for him by dividing his ascent to health into practicable stages.

So far, we have described the progress of the most suitable case—the case which can be dealt with easily in this scheme. Of these cases a considerable number have passed through the hands of the association in this particular way; in every case the results have amply justified the energy, time, and money expended on them. Comparing these cases with those allowed to return home without receiving this assistance from the association, there seems to be a marked shortening of the time elapsing between the patient's return home from the sanatorium and his resumption of full work. There is always, we find, a tremendous inclination on the part of the patient who has completed his treatment at one of certain sanatoria to become so wrapped up in himself, and to be so impressed with the gravity of his ailment and with the importance of not exerting himself unduly, that, clinging to his club money, he hesitates to re-enter his former occupation; he almost invariably looks for some further help, very little persuasion being necessary to induce him to accept some form of charity until, as he puts it, he gets quite strong. This attitude can be successfully combated by carrying on the treatment at sanatoria entirely on industrial lines—that is to say, by marking out the exercise allotted to the man, as far as possible giving it to him at his own trade, and commencing it at the earliest possible opportunity. It appears to us to be a gravely mistaken policy to treat early cases of pulmonary tuberculosis by means of graduated work unless that work is one in which the patient recognises his former employment or, failing that, one which gives a practical result: only then does he realise that under the favourable conditions obtaining at a sanatorium the actual work, far from contributing to his disease, enables him to fight against it—a realisation invaluable for the patient, for having reached it he is willing to return to his home and needs little encouragement to restart his former occupation (provided always that the occupation is one of a suitable nature).

THE WORK OF THE AFTER-CARE ASSOCIATION.

The work of the After-Care Association may well be illustrated by concrete cases, though we are well aware that the objection may be urged that insufficient time has elapsed between the patient's discharge from a sanatorium and the point at which the case is reviewed to allow of any very definite conclusion being arrived at that permanent benefit has accrued from this treatment. This line of argument may be entirely valid, and we shall have to wait until a considerably longer time has elapsed before we can definitely state that our method has been of permanent benefit to the cases concerned. Nevertheless, we are of opinion that we have already sufficient evidence to show that unless the method which is here being advocated had been adopted many of the patients would still be in receipt of a diminishing club allowance and would not have become producing economic members of the community.

In dealing with such cases two points must be kept constantly in view: 1. The benefits which accrue to the individual patient. These benefits may be a very considerable prolongation of a working life, greater contentment of mind, and other personal considerations. 2. A definite gain to the community in the form of value of the work performed by the man and the consequent gain to the State and the Friendly Society concerned by the gradual withdrawal of the man from the list of those receiving sickness benefit.

The tuberculosis problem is, of course, not completely solved on these lines, as is imagined in some quarters, nor is it contended that the Cambridgeshire After-Care Scheme can be put forward as constituting any new specific for the cure of tuberculosis. It has been designed rather with the object of rendering a consumptive working man of economic value to the community, and so of preventing the great drain on the funds of State and private side of Friendly Societies working under the National Insurance Act, and at the same time of enabling the patient to be placed in the most favourable position for the arrest of the disease.

Fifty-two cases have been assisted on the principles laid down during the period under review—three years. Out of these 52 cases, all in the first or second stage, only one has died; the others at the time of writing are all engaged in remunerative work. Those who have been assisted during the last few months are naturally not yet on full work, but those who were assisted between two and three years ago, with one exception, are all at full work. Nearly all the cases are those of men following country pursuits, but one or two are clerks in a factory or in an office; others are men who have been assisted to change their occupations for the benefit of themselves and their families. How many will fall out in a year's time or in two years' time it is impossible to say, and for this reason we wish to be quite guarded in making any undue claims for the advantages of this scheme. In one particular, however, it seems quite clear that there has been a considerable gain. In many cases the patients would have hesitated very considerably before "coming off the club" if there had been no special inducement for them to do so. Once they are "off the club," many hesitate to go on again, especially if they can gradually increase the number of their working hours and slowly accustom or "acclimatise" themselves to the new conditions.

A very typical case is that of a worker in a skin yard. When first seen the disease was in its second stage. The man was "on his club," and was apparently content to remain there. He had been "incapacitated" for nine months, and was firmly convinced that he would never be able to work again. His wife went out charing. Having found the man a suitable occupation—driving a light cart for his firm—he was induced to work six hours a day, being given a bonus of 10*s*. a week. Since then, during the past three years, the man has continued to work with but slight and temporary breakdowns. He is still working.

A farm labourer similarly treated, after going through a sanatorium course, is still at full work (harvest work at present). He was only induced to re-start work by the offer of assistance together with the willingness of the employer to take him on for part-time work to start with.

The proof is not conclusive, the data are not sufficient, but the facts point to the conclusion that the scheme is a step in the right direction.

THE PROBLEM OF FINDING SUITABLE WORK.

We have already stated, in reviewing the answers of the patients to a set of questions here given, that the crux of the whole matter seems to be the suitability of the work offered, and whether the work offered is really a concrete proposition. In a rural district such as Cambridgeshire, the finding of employment for such patients as are here described offers less difficulty, perhaps, than would be experienced in other parts of the country, especially in areas covered with crowded dwellings, large towns, mining districts, and so on. The difficulty is great even in a rural area, and will undoubtedly be greater in a county more densely populated, especially where the spread of the knowledge of the disease and of its treatment is defective.

Even in Cambridgeshire, where probably the conditions are simple and the difficulties less acute, the problem of finding work for ex-patients has by no means been solved in its entirety. It is, however, we hope, in the process of solution, the first essential having been secured—viz., *a method by which tuberculous labour may be subsidised for the time being;* for such a length of time as will secure the patient a favourable re-start at an occupation eminently suited to his condition. This principle, as has been explained, has been developed by the After-Care Association, and although the practice has been limited, the way of reform is clearly indicated.

In order to test still further the method, advantage has been taken of the very favourable opportunities which are afforded during the treatment of the tuberculous soldier, and doubtless the Ministry of Pensions had the principle of subsidising tuberculous labour in its mind when the proposals

were drafted. The proposals, however, fall short in so far that they do not provide the necessary accommodation for instruction in, and the carrying on of such labour—though once it is subsidised it can only be a matter of a few months before the provision of such accommodation will be an accomplished fact. In other words, we shall have established the chief essential for the after-care of the tuberculous soldier—that of providing him with work and subsidising his labour so that he may become a wage-earning member of the community.

Working Capacity of Ex-sanatorium Patients.

It is agreed that (according to the stage of the disease) an ex-sanatorium patient can do only from 30 to 60 per cent. of the work done by the normal individual; and since this is an ascertained and undisputed fact it is foolish to ignore it. That we have ignored it in the past is only too evident, and accounts for the story of failure which has followed most after-care efforts. *If a man is capable of doing only 60 per cent. of the work of a normal man it is only courting disaster to attempt to place him amidst his old surroundings and without assistance, in competition with the strong full-blooded worker.* To send him back to such surroundings with a pint of milk a day would seem humorous if it were not so tragic. It is inadequate, unscientific, senseless.

Hitherto the essential facts of the case have been ignored, so much so, indeed, that a mass of opinion, both medical and lay, is at present on the verge of condemning the principles of sanatorium treatment. The principles are sound enough; it is the method of applying them which is at fault. The essential facts to be grasped, if we are to deal satisfactorily with this problem, is that a consumptive working man cannot equal in working capacity a full-grown healthy man, and that until a specific cure for tuberculosis has been found sanatorium treatment can do no more than retard the disease and, under favourable conditions, arrest it. If, therefore, the retarding process can by some means be indefinitely prolonged whilst the man is doing industrial work our end is gained. Such means in our present state of medical knowledge would seem to constitute the right form of treatment both for the individual concerned and from the point of view of the State.

In densely populated districts and in areas where the housing conditions are bad and the hours long the chances of retardation of the disease in the ex-sanatorium patient are reduced to nothingness, and it seems to the writers that he will be a bold man indeed who attempts to carry on after-care in such surroundings. Just as the State recognises that it must be responsible for the treatment and training of ex-soldiers who have been incapacitated by the war, so the State ought to shoulder the responsibility of these civilians who fall by the way, succumbing to tuberculosis. The stress of modern life, inadequate housing, and severe competition are responsible for the break-down of such men, and it seems that since the State has already shouldered so much responsibility it should go a step farther and make sure that the opportunity be given to these men to do the work of which they are capable, though it be but a percentage of a full day's work.

THE BOURN COLONY.

This thought, together with others, made the writers attempt in a small way to estimate the amount of work of which sanatorium patients are capable, and to ascertain whether under suitable conditions various forms of labour could not be carried out without the elaboration of sanatorium surroundings; hence the foundation of the Bourn Colony, where it has been a matter not for surprise only but for congratulation to see what can be accomplished with a minimum expenditure of money, though not of time and energy.

The Bourn Colony was started by one of us (P. C. V.-J.) a little over two years ago. The "colony" consisted at that time of an old country house standing in its own grounds of two acres. It had long been empty, the garden was unrecognisable, and other parts of the ground resembled a wilderness. On this site a few shelters were erected and the patients (early cases with and without T.B. in the sputum) installed. In the house resided a matron (a trained nurse) and a nurse, together with a cook.

The number of shelters was gradually increased and the work of planning out the colony was begun. Paths had to be made and the land drained; a large pond in the middle of the grounds had also to be drained and filled up. To accomplish this a trench 6 feet deep and 40 yards long was dug by the patients. As soon as this necessary work had been done our attention was turned to the further fitting up of the colony for the reception of more patients. Since each patient lives in a shelter, the matter was easy of solution, and it was only necessary to erect more shelters to make the place available for the reception of the larger number of patients. We were, however, without a trained carpenter, but one or two of our patients being rather more skilled with their hands than the others volunteered to design and make a shelter which would serve as a pattern.

Our colony at that time resembled somewhat closely the island on which the "Admirable Crichton" of the play landed after the shipwreck. In such a community one patient will always take the lead, and if it is fortunate in having the right type of man the work will go on. This, at any rate, was what happened at the Bourn Colony in its early days. We were fortunate, also, in having a discharged soldier who had been a market gardener, and in a very short time, as he was able to enlist the sympathies of some of the patients, the garden grew apace.

The beginning of the colony well illustrates the principles on which it is run. Patients are encouraged to follow an occupation as near as possible to that on which they were formerly engaged, with the consequence that the colony has developed on simple lines merely with the aid of the patients themselves. After some time a carpenter patient arrived, and, guided by his experience, shelters have been re-designed and have been made at a greatly accelerated pace; now practically half the shelters in the colony are of home construction, and the patients, seeing the efforts of their labours amply rewarded by the installation of another patient who has benefited by open-air treatment in a hut made by themselves, are encouraged to push on with other shelters. As we have been able to extend the scheme on the recently acquired Papworth Hall estate, a still greater number of patients can be accommodated, and the work at Bourn is growing, the construction of shelters which will be worthy of the newer institution going on rapidly.

Practically all the patients now at Bourn are discharged soldiers; on admission they all had tubercle bacilli in the sputum, but, with the work as planned out, they are steadily improving, and—a very important matter—are taking a keen interest in their surroundings, a great factor in adding to the efficiency of the work and the benefit obtained.

The original capital laid out in the acquisition of the house and the rent of the grounds, in the building of a small sanitary block, in the purchase of extra bedsteads and bedding for the new shelters, in replacements, &c., was the moderate sum of £500, and up to date this has enabled 88 patients to be treated on the above lines. After two years' work 90 per cent. of the patients discharged from the colony are now at full work, and we think it can be claimed that the treatment is not only economical but that the results are in no way inferior to those obtained in sanatoria enormously more costly to build and much more expensive to equip and administer.

The colony being, of course, used as a training ground in connexion with the After-Care Association, a number of patients have been admitted who have had preliminary treatment in other existing sanatoria. Those who have returned to the county and have not been able to work have been taken in at the colony and there encouraged to make a new start on some suitable occupation. The latest addition to the activities of the colony is the tailor's workshop, which, again, has been erected by the patients themselves. The occupant, an ex-army man, who is a tailor by trade, is engaged in gardening work part of his time and part in tailoring in his specially designed workshop.

COMBINED SYSTEM OF INDUSTRIAL COLONY AND AFTER-CARE.

We have now no doubt that the experience gained at Bourn Colony, together with the experience of certain sanatoria which have made a feature of the introduction of trades into the sanatorium régime, will be of enormous value in indicating the way to the reorganisation of sanatorium treatment. Such experience affords promise that we have only to abandon the short sanatorium treatment and work on the lines of a prolonged stay at the less

expensive and more moderately staffed industrial sanatorium, run entirely on colony lines, to obtain the results which we have been led to expect and can now confidently anticipate.

Many local authorities at the present time hesitate to put up expensive buildings for the treatment of tuberculosis on what one might already describe "old lines." Let them be encouraged to work on the colony principle and follow their cases up by means of an after-care association.

It is the intention, in Cambridgeshire, to proceed still further along the above slightly sketched lines, and by means of a subsidy paid by the State through the Pensions Ministry or through Friendly Societies (the principle as will be seen is the same), to encourage the formation of a Garden City with organised industries in connexion with a central institution. Part of the Papworth Hall estate, which has recently been acquired for the working of the scheme, is being satisfactorily adapted; model workshops where the consumptives will in time be employed are being fitted up, and the model village to accommodate them, which already exists, will, we hope, also be acquired. It is anticipated that the maximum results will be obtained by sanatorium treatment, and that the breakdown which under present-time conditions so frequently occurs when the working man is discharged from the sanatorium may thus be prevented.

Summary of Advantages of System.

To sum up, the following advantages of the combined "colony" or industrial sanatorium and after-care system as here outlined may, with considerable confidence, be anticipated.

1. Prolongation of the period of treatment with—(*a*) more intensive, because more interesting and better graduated, treatment; (*b*) the utilisation of suitable occupations in such treatment even during the earlier stages of residence in the colony; (*c*) the continuation of training and the consolidation of the improvement already gained during the preliminary stages of treatment; (*d*) more personal supervision and immediate encouragement.

2. The utilisation to the best advantage of the funds drawn from (*a*) the National Insurance Commissioners; (*b*) the rates; (*c*) the Pensions Ministry; (*d*) Approved Societies; (*e*) voluntary subscribers.

3. The pooling of the advice and countenance of these various authorities, bodies, and individuals.

4. The preparation and encouragement of the patient to re-enter, under more favourable conditions, on the struggle for a livelihood without having to contend against the drawbacks attending overwork, overstrain, and anxiety.

5. The moral encouragement afforded to the patient by the knowledge that these favourable conditions, already tried and successful in the case of others, are available in his own special case.

6. The gain to the community of a productive member in place of a useless consumer. It may be objected that this member is producing but 50 per cent. or 60 per cent. of his full or original amount, but to this it may be answered that this 50 per cent. or 60 per cent. may represent considerably more than the full capacity of many a healthy worker.

7. The segregation and isolation of "centres" of massive infection and the bringing down to a comparatively safe dilution, of less—but still under certain conditions—dangerous quantity.

8. The education of patients in the "ritual" necessary for their own "nutrition," maintenance in, or restoration to, health and strength, and especially the knowledge of how to render themselves harmless to themselves, their families, and their friends.

9. The inculcation of a feeling of moral and physical self-respect involved in,

10. The knowledge that they are being cared for, not out of charity, but because their fellows—the State or community—recognise that they, members of this community, have fallen by the way, not as a result of their own misdoings, but because surroundings were unfavourable and conditions adverse, and that these righted they still have a chance of making a success of their life and work.

A LONG APPOINTMENT.—At the last meeting of the St. Thomas's (Devon) board of guardians a resolution was passed unanimously expressing the gratitude of the guardians to Mr. Henry Wallace Furnivall for his 40 years' devoted service as medical officer for the Woodbury District, and expressing regret at his resignation of the post.

THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT AS REGARDS THE WORKING CLASSES.[1]

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IT must be admitted that the results of sanatorium treatment of the working classes, as revealed by the after-histories of discharged patients, are at present far from satisfying. It is not that this particular class of patient fails to respond to treatment. Those drawn from a large city and its immediate neighbourhood, who form a very large majority of the total admissions to the sanatorium at Frimley, do, given reasonable initial selection, respond rapidly and well, generally are intelligent and easy to instruct, and make an attempt to carry out sanatorium principles in their subsequent life. In fact, the response to and immediate result of treatment in such cases are, in my experience, strikingly and almost uniformly good.

During the three years 1905–6–7, 292 patients, in whose sputa tubercle bacilli had been found, were discharged from the sanatorium at Frimley. Of 266 of these, who were traced to the end of the first year following that of their discharge, 65·8 per cent. were well and working, 24·4 per cent. were alive, and 9·8 per cent. were dead. Of 245 traced to the end of the second year following that of discharge, 56·8 per cent. were well and working, 21·6 per cent. were alive, and 21·6 per cent. were dead. Of 209 similarly traced to the end of the fifth year following that of discharge, 38·8 per cent. were well and at work, 14·8 per cent. were alive, and 46·6 per cent. were dead. These 292 were selected cases, carefully chosen by the physicians to the Brompton Hospital, and the great majority had undergone preliminary treatment at that institution, thus being under consecutive treatment for a very considerable period.

I propose to consider very briefly some of the chief factors responsible for such a rapid loss of working capacity in so high a proportion of cases, which factors are, in the main, well recognised, and to point out certain directions in which there seem to lie opportunities for improvement in the treatment of this class of patient.

I. *The Return to Faulty Environment.*

The great majority of these 292 individuals returned to their work in London at which they had broken down previously. The frequency and rapidity with which loss of condition and return of unfavourable symptoms follow a return to urban life are very striking. It is not easy to point to any one specific cause of this relapse. In a proportion of cases it follows immediately upon an attack of influenza or of common cold, accidents inseparable from town life. In others no such exciting cause can be traced. Its occurrence does not appear to depend to any great extent upon the presence or absence of what ordinarily constitutes "after-care."

At the time of the discharge of these 292 individuals there was little or no special provision for their after-care. Lately there has been improvement in this direction, and early in 1915 a special branch of the Almoner's department at the Brompton Hospital was instituted to deal with cases discharged from the sanatorium. A health visitor was also appointed. Homes were visited, arrangements made for the patients' return, help given where necessary, and patients were persuaded in gratifying numbers to present themselves regularly to report and to keep under the observation and treatment of hospital, dispensary, or private doctor. In many other ways useful work was done, the whole constituting a fairly complete system of "after-care."

For some years past a change to a more suitable environment has been urged upon many patients on their discharge where such a change seemed desirable. Until recently, in the absence of efficient supervision, it has been possible to accomplish this in comparatively few instances. Since the institution of the after-care department it has proved feasible in a much larger number.

[1] A contribution to a discussion at the Medical Society of London on Nov. 12th, 1917.

In order to demonstrate the beneficial result of such change of environment tables have been prepared contrasting the immediate after-histories of two groups of cases.

A. All traced instances of "apparent arrest of disease" and restored working capacity discharged in a certain year, and returning to their former occupations in and about a large city.

B. All traced instances of restored working capacity discharged in the same year and who effected a recommended change of environment.

(A) During 1915 a group of 32 cases, presenting important features in common, left the sanatorium. They all came from urban working conditions. In all tubercle bacilli were present in the sputum at the commencement of treatment; in none were they so found at its conclusion. The average number of lobes of the lungs in which any signs of disease had been noted was 1·8. They formed an excellent collective example of the "good sanatorium case," and were classified on discharge as instances of "apparent arrest" of the disease. They all returned to the homes and working conditions in which they had broken down previously. The majority of the patients were of distinctly the better working-class type. Their homes generally were clean and not obviously insanitary, sleeping arrangements satisfactory, and wages good. The work to which they returned was of very varied character, but as a whole, neither particularly arduous nor dangerous. All those still alive had been traced up to the latter half of the present year (1917). Of these 32 people, at the time of the latest reports (averaging two years and a few months from the date of discharge) 10 (31·2 per cent.) were well and at work and had kept so; 5 (15·7 per cent.) were "fairly well" and still at work; 8 (25 per cent.) were alive, but unable to work; 9 (28·1 per cent.) had died.

(B) In the same year, 1915, out of a number of cases of relatively good prognosis who were recommended to secure improved conditions 44 were able to effect a change for the better. They were not specially selected as having only slight pulmonary lesions, for in a considerable number such lesions were quite extensive. Nevertheless, they all appeared capable of doing a reasonably full day's work and to have a fair chance of maintaining working capacity in healthy surroundings. In all tubercle bacilli were present in the sputum at the commencement of treatment, in 23 they were still present on discharge, in 21 they were not so found. The average number of lobes of the lungs in which any abnormality had been noted was 2·2. All have been traced into the latter half of the present year. They form a group roughly comparable to the one analysed above. Twenty-nine effected a change of both residence and occupation, five a change of occupation only, while ten found situations at their former employment in more suitable localities. Many made the change unaided except with advice, to others help was given in the search for work or in the removal of the home, for some situations were found, and for a few courses of instruction in motor-driving, &c., were provided. Six joined the Forces. In most instances the work and surroundings which they were able to secure were far from ideal, but constituted a marked improvement on their former conditions. Of these 44 individuals, after a lapse of time averaging a few months over two years and excluding one who was accidentally killed, 35 (81·4 per cent.) have remained continuously well and at work; 6 (13·9 per cent.) are well and at work, but have had time off from work for illness and in 4 cases further institutional treatment; 1 (2·3 per cent.) is fairly well, but not at work; 1 (2·3 per cent.) has died.

The time interval is short, and these lists are admittedly imperfect, as time did not permit a thorough attempt to determine the fate of untraced cases, and most of those who are abroad have been excluded. Again, it is likely that among those who have effected a change are the majority of the more resourceful, intelligent, and financially better situated individuals. While these lists are far from being accurate statistical tables, I believe they illustrate tolerably fairly the rapid wastage on return to urban industrial life and the improved outlook under better conditions. It seems possible that the attempt to return to working-class life in cities, large numbers of discharged sanatorium patients who are, or have been recently, cases of "open" disease, may have to be abandoned as entailing great waste of life, labour, and money.

Obvious alternatives are: (*a*) Greatly prolonged residence in sanatoria; (*b*) a long or short period of treatment, respectively combined with or followed by training and subsequent start in suitable work in a proper environment; (*c*) the establishment of rural industrial centres, in which patients could work at their accustomed, or some closely allied branch of industry.

II. *The Lack of Provision for Prolonged Treatment.*

The working-man, who is obliged to return to full work immediately upon his discharge, requires longer sanatorium treatment than any other class. In all but the really incipient case two or three months is a quite inadequate period. It is reasonable to urge that in those with "open" disease, however limited in extent, some months at least should be spent under sanatorium conditions after the stage termed "arrest" has been reached. This at present is impossible for financial reasons. With the exception of a few more fortunate individuals, the married man is obliged to return to work far too soon, and prolonged treatment can be given only to the unmarried, usually young, man without responsibilities, who constitutes by no means the most promising material.

As to the length of time necessary to render those with health seriously undermined by extensive disease fit to resume ordinary working-class life, I have little experience. On the staff of the sanatorium at Frimley are a number of individuals who were originally of this type. They have done good work continuously for several years, in some instances for so long as 11; but I think he would be a bold man who would counsel their return to other environment. I know that the annual holiday, when they revisit their homes for a short time, is a very critical period.

With some form of permanent colony for advanced cases in suitable surroundings and under constant medical supervision, there seems little doubt that their lives would be prolonged, with a varying degree of capacity for useful work, and that in a certain number more substantial results might be obtained.

III. *Lack of Provision for Re-treatment.*

A considerable number of discharged cases require re-treatment sooner or later. It may be that, following a period of steady work and good health, loss of condition or recrudescence of symptoms points to the probability of relapse. Prompt cessation of work and removal to a healthy environment are called for. Delay may entail loss of employment and serious illness. Improvement is most rapid and satisfactory under sanatorium supervision. Unfortunately, admission to charitable or other public sanatoria involves, as a rule, a long period of waiting. During the last two years the use of occasional beds at the sanatorium at Frimley has been sanctioned for this purpose. The cases have been selected in the after-care department at the hospital, preference being given to those in whom the prognosis at the time of discharge seemed relatively good. These few beds have done useful work, for, if taken in time, the readmitted case responds rapidly. I believe that serious relapse may often be averted by this procedure and that an extension of such facilities would be a true economy.

IV. *The Admission of Cases Unsuitable on Grounds other than Medical.*

Among the admissions to a public sanatorium are a number of individuals whose treatment is foredoomed to failure on account of their habits, lack of will power or intelligence. Though they may be excellent subjects upon other grounds of selection, and though they may make a good immediate response to treatment, they relapse quickly upon discharge.

Such persons form an appreciable percentage of the total admissions. The difficulty is more likely to be encountered where treatment is gratuitous or given from public funds. It is not easy to exclude such people, since frequently the defect is apparent only after a period of observation, and it is probable that cases of this nature will always influence statistics adversely.

V. *The Need for Earlier Diagnosis.*

The working man's only capital is, as a rule, his capacity to perform continuously a full day's work. Once his working capacity is permanently impaired, however slightly, his whole outlook is jeopardised and provision for his future rendered more complicated and costly. In his case early diagnosis is all-important. At present a considerable number of individuals reach sanatoria for the first time permanently crippled by extensive disease. In the absence of elaborate provision for "after-care," residence for a few months at a sanatorium does little or no permanent good to the great majority, their after-histories are dolefully reading, and it is doubtful if the expenditure of large sums of money for this purpose is justifiable on any grounds. Certainly, in the case of many, such money could be laid out infinitely more wisely in other directions for their benefit.

In a very disquieting proportion of these cases there is a previous history of initial symptoms disregarded or made light of. Since treatment of advanced active disease is so hopeless and since in even selected cases of manifest disease present methods call for elaborate and costly amplification, recognition of initial symptoms and supervision at the really incipient stage are all-important for the working man. It is at this stage he needs access to the expert physician for diagnosis and advice, warning of future possibilities, regular and skilled medical supervision over a prolonged

period, education, removal from obviously unsuitable environment, and all that constitutes "after-care." It may not be essential to send all patients away for treatment at this stage, but wherever initial symptoms are accompanied or followed by impairment of general health a period of residence in a sanatorium is probably the most efficient means of restoring condition and imparting valuable knowledge. These incipient cases retain their working capacity for very long periods after discharge from sanatoria, in whose records they constitute a considerable proportion of the cases classed together as "tubercle bacilli not found," and whose after-histories are so good. Other methods of treatment can show a high percentage of successful records in this type.

Where similar results follow such widely varying procedures as residence in sanatoria, regular attendance to receive medicine, or the inoculation of various kinds and doses of tuberculin, it seems probable that these results must be ascribed to the factors common to all such forms of treatment—namely, the warning, supervision, and greater or less degree of education and after-care which the patient receives. Recognised and supervised the incipient case does well, unrecognised and assured that nothing is amiss a considerable number certainly do very badly.

In touching upon these causes of "sanatorium wastage" I have emphasised, necessarily, the gloomy aspect of the problem. Nevertheless, I am convinced that given certain essentials—viz., early diagnosis, reasonable treatment, and a chance to spend his future working life in a proper environment—certain attributes of this class of patient make him the most profitable subject for sanatorium treatment.

THE CONDITIONS OF GROWTH OF *BACILLUS WELCHII* IN THE PRESENCE OF OXYGEN.

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Bacillus welchii is classed among the strict anaerobes, and in working with this organism much care is usually taken to make the conditions as anaerobic as possible for its growth. Certain statements in the literature have for a long time made us suspicious of this classification, and in the following notes are presented some observations in this direction.

The matter of the presence of air was taken up many years ago by Tarozzi, and Ori and Wroszek, who claimed that the addition of small pieces of various substances, animal and vegetable, was sufficient to induce the organism to grow in the presence of air. A certain amount of discussion followed as to whether it was necessary that the material should be living or dead when introduced into the culture medium. Rosenthal claimed that these organisms could be grown in the presence of air provided that they had been adapted to this mode of growth by preliminary treatment.

Recently Wright has repeated the experiments of the previous investigators and has confirmed them. On these he has based certain theories regarding treatment. The idea is advanced of "niduses of lowered bacteriotropic pressure."

What appears to have escaped the observation of these investigators is the fact that given a simple culture medium of suitable character, the *Bacillus perfringens* grows perfectly well under those conditions which bacteriologists speak of as aerobic, *provided the medium is freshly sterilised*. This can be done without the addition of any adventitious substance such as potato, liver, apple, or platinum black. The original difficulty in getting the organism to grow under aerobic conditions was probably due to the relative unsuitability of the culture media which were employed.

The strains of *B. perfringens* which have been used in the present work are those which have been used by us in other series of investigations. They have retained all the cultural characteristics of the organism, and, what is possibly more important, their chemical behaviour has remained absolutely constant. We have every reason to believe that they represent quite normal strains of this organism. As will be seen, we have controlled these results with other strains, among them one from the Institut Pasteur, Paris, with identical results.

The culture medium used was a peptone solution made by the digestion of casein, to which glucose was added, and adjusted to a definite hydrogen-ion concentration (acidity) with the hydrogen electrode. Experiments which we have recently made, and which are reported in the *Journal of Pathology and Bacteriology*, show the important influence of this single factor—the reaction of the medium—on the growth of these bacteria.

The content of "peptone" was about 2 per cent. The amount of culture medium used was 10 c.c., contained in ordinary bacteriological test-tubes, 5/8 × 6 inches. The inoculation was made with three drops of a 15-hour old culture on milk, which was seeded from a 6-hour old culture on cooked meat. The inoculation was made with a fine capillary pipette, so that the amount of fluid introduced was, roughly, 0·1 c.c.

Preliminary Experiment.

A preliminary experiment gave the following results:—

Tubes of glucose peptone containing 10 c.c. of medium and provided with Durham tubes, were inoculated and incubated at 37° C. for 24 hours. All these tubes showed a vigorous fermentation. The Durham tubes were filled with gas.

As the Durham tubes introduced a complication, by providing that a portion of the medium should be more or less sheltered from direct contact with the air, a second set of tubes was used.

These were the ordinary bacteriological test-tubes described above, containing 2 per cent. glucose peptone. The area of fluid exposed to the air was about 2 square centimetres. A similar set contained Durham tubes. A third set was so arranged that they could be incubated in a sloping position and so expose a larger surface to the air. A fourth set consisted of quite large tubes, 1 in. in diameter, containing the same amount of culture fluid. These were also grown in a sloping position.

In the small tubes containing Durham tubes the bacteria might be expected to find conditions which were more or less anaerobic. In the small tubes incubated in the upright position there would be less chance of the bacteria avoiding contact with the air. The chances for contact with air would be increased with the small and large tubes in the sloping position.

Four types of media were used in these experiments: (1) 2 per cent. glucose peptone; (2) 2 per cent. lactose peptone; (3) 2 per cent. lævulose peptone; and (4) 2 per cent. maltose peptone.

Three different specimens of *Bacillus perfringens* were used. The first set was inoculated with *B. perfringens*, K 95, 16 hours old, on milk; the second set with *B. perfringens*, K 94, 16 hours old, on milk; and the third set with *B. perfringens*, K 90, 49 hours old, on cooked meat.

The bacillus fermented the different sugars equally well, so far as could be judged by the gas production.

TABLE I.

—	Total number of tubes.	Number fermented.	Number unfermented.	Per cent. fermented.
With Durham tubes	11	11	0	100
Without ,, ,, ...	12	8	4	66
Small slopes	7	3	4	43
Large ,, ...	3	0	3	0

From these experiments (see Table I.) it is clear that *B. perfringens* is not absolutely anaerobic. It prefers anaerobic conditions, but can develop when air is present. The greater the amount of air that has access to it the less favourable are the conditions of growth.

Further Experiments.

In order to test further the ability of *B. perfringens* to grow under aerobic conditions another set of experiments was arranged.

Tubes were prepared containing 2 per cent. glucose peptone at a favourable reaction for growth. The reaction was $P_H = 6{\cdot}6$. Each tube contained 10 c.c. of medium.

There were three sets of tubes, each set being inoculated with a different culture of the bacillus. Each set consisted of:—

1. A small tube containing a Durham tube.
2. A small tube without a Durham tube.
3. A large (1 inch) tube containing a Durham tube.
4. A large (1 inch) tube without a Durham tube.
5. A large (1 inch) tube, incubated in a sloping position.

6. A large (1 inch) tube, incubated in a sloping position and shaken frequently so as to change the air in contact with the surface.

Series A was inoculated with K 97, Series B with K 98, and Series C with K 98 (in each case 24 hours old on cooked meat). The tubes were examined three days after inoculation.

TABLE II.

No. of tube.	Series A.	Series B.	Series C.	No. of tubes fermented.
1	+	+	+	3:3
2	+	+	+	3:3
3	+	+	+	3:3
4	–	–	–	0:3
5	–	–	–	0:3
6	–	–	–	0:3

+ Indicates growth; – indicates no growth.

These experiments show that *B. welchii* prefers anaerobic conditions to those where air is present. When, however, the conditions are nominally aerobic but the organism can find a certain amount of shelter from oxygen, either by reason of the depth of the layer of liquid or other cause, development will take place. Once development has begun the dissolved oxygen of the liquid is swept away in the evolved hydrogen and carbon dioxide produced by the fermentation.

In order to ascertain whether *B. perfringens* could develop in a steady stream of air, the following experiment was devised.

A litre flask was taken and provided with a three-holed rubber stopper. Through one hole passed a tube on the outer end of which was a cotton-wool air filter. The end inside the flask was drawn out into a fine capillary. Through the second hole passed the inoculation tube, and through the third hole passed the air-delivery tube. 500 c.c. of the glucose peptone were placed in the flask, which was sterilised in the ordinary way. After sterilisation all joints were made tight with paraffin wax. The delivery tube was closed off with a sterile-air filter, and the contents of the flask inoculated with a young culture of *B. perfringens*. After inoculation the flask was incubated in a water bath at 37° C. The air filter attached to the delivery tube was then connected to an aspirator by which sterile air could be passed through the medium by way of the capillary. The air-supply was so regulated that about 300 c.c. of air passed through the medium per hour.

After 24 hours the medium was examined to ascertain whether fermentation had taken place. The liquid was only slightly clouded. The reaction of the liquid, as determined by the hydrogen electrode, was very slightly more acid. Analysis of the outgoing air showed it to contain more carbon dioxide than ordinary air. The percentage of oxygen was somewhat low, indicating the presence of a gas such as hydrogen. The liquid had fermented, although the fermentation was of a very feeble nature.

Data.—500 c.c. of glucose peptone, sterilised at 110° C. for 45 minutes. Incubated at 37° C.

Air drawn through at the rate of 300 c.c. per hour.

Absolute reaction before inoculation, $P_H = 6{\cdot}7$.

Absolute reaction after fermentation, $P_H = 6{\cdot}4$.

A control experiment made with the same apparatus, using 750 c.c. of nutrient medium, gave practically the same result. The amount of carbon dioxide formed during the 24 hours was about 50 c.c.

A glucose peptone experiment done under strictly anaerobic conditions will yield about 750 c.c. of gas per litre, and the fermented medium will have a reaction of about $P_H = 4{\cdot}5$.

Experiments with Other Strains.

In order to control the above results obtained with a single strain of *B. perfringens* which we had subjected to frequent transfers, we investigated five different strains of *B. perfringens* to ascertain if their behaviour towards air was the same. These strains were taken from cultures given us by Captain H. Henry, R.A.M.C., and included a strain marked "Pasteur," furnished by the Institut Pasteur of Paris.

The method of testing them was to prepare sets of tubes containing 2 per cent. glucose peptone water. The tubes were so selected that the bacteria, after inoculation, were submitted to conditions becoming less and less anaerobic. The different types of tubes used were:—

1. Small tube; with Durham tube; surface exposed to air, 2 sq. cm.
2. Small tube; no Durham tube; surface exposed to air, 2 sq. cm.
3. Large tube; with Durham tube; surface exposed to air, 7 sq. cm.
4. Large tube; no Durham tube; surface exposed to air, 7 sq. cm.
5. Large tube; incubated in a sloping position.

Five sets of such tubes were prepared, and each set was inoculated with three drops of one of the five cultures, three hours after these arrived in the laboratory. They were then incubated for 24 hours, after which time examination was made for growth.

Series A was inoculated with strain labelled "King, 10/5"; Series B with strain labelled "Pasteur, 10/5"; Series C with strain labelled "Benson, 10/5"; Series D with strain labelled "Bryant, 10/5"; Series E with strain labelled "Wills, 10/5."

The results are given in Table III.

TABLE III.

Tube number.	Series. A	B	C	D	E	No. of tubes fermented.
1. Small tube, with Durham.	+	+	+	+	+	5:5
2. Small tube, without Durham.	+	+	+	+	+	5:5
3. Large tube, with Durham.	+	+	+	+	+	5:5
4. Large tube, without Durham.	+	–	+	+	+	4:5
5. Large tube, grown sloped.	–	–	–	–	?	1?:5

+ Indicates growth; — indicates no growth.

It is seen from the above that the condition favouring growth is protection from air and a consequent low concentration of oxygen in the nutrient media. There is no essential difference in the behaviour of these organisms from the original ones with which we have worked. The strain which corresponds in every particular to our own is that of the Pasteur Institute.

It would appear, therefore, that with a medium favourable for growth the development of the organism is determined by a suitably low concentration of oxygen.

Remarks.

The solubility of oxygen in water is such that 100 c.c. of water saturated with oxygen gas dissolve about 2·5 c.c. at 37° C. (Fox). At 100° C. the solubility is decreased, so that only 1·7 c.c. are in solution. With air, which has a partial pressure of 20 per cent. of oxygen, only 0·5 c.c. is in solution, while at 100° C. that amount is probably about 0·37 c.c. This is not taking into account any decrease of solubility due to salts or soluble nitrogen compounds in the medium.

The situation, therefore, is this: that during sterilisation less than 0·37 c.c. of oxygen per 100 c.c. has been left in the medium. As the surface of liquid exposed to the air is small, and as convection currents of air and liquid are slight, the amount of oxygen taken up by the liquid from the air is very small. Hence the concentration of oxygen in the lower layers of the tubes is such that it does not interfere with the growth of *B. welchii*. As growth proceeds and gas is evolved, oxygen is driven out of the upper layers, so that finally growth takes place in all parts of the tube.

That a higher concentration of oxygen than that remaining after sterilisation inhibits growth is shown by a simple experiment.

If we saturate the medium with oxygen before inoculation no growth should take place. In order to test this, tubes were prepared of the same diameter containing the same medium. Under aseptic conditions oxygen was bubbled through the sterile medium. The oxygenated and the control tubes were inoculated at the same time. The oxygenated tubes produced no growth, whilst in the untreated tubes there was a vigorous growth.

Wright makes the statement that potato bouillon gives a much less vigorous growth when stale than when freshly prepared. The explanation for this is, in our opinion, that the "stale" tubes have had time to absorb sufficient oxygen from the air to inhibit growth.

It would appear, therefore, that with a medium favourable for growth the development of the organism is determined by a suitably low concentration of oxygen.

It is possible to test the conception of a region of diminished bacteriotropic pressure by doing away with this region. For this purpose we take the same medium, which

under certain conditions of oxygen tension does not grow the bacillus of Welch, and under lower oxygen tension produces a vigorous growth. This medium is inoculated, and during incubation a constant stream of nitrogen, containing 1 per cent. of oxygen, is bubbled through. The bubbling of a similar current of air containing 20 per cent. of oxygen inhibited growth. In the nitrogen tube a very vigorous growth takes place. Although we have prevented any segregation of bacteria, this has in no way inhibited growth, although a slight increase in oxygen tension does so.

Wright states that one

"must abandon the traditionary view that the growth of anaerobes pivots on the presence or absence of oxygen ..... and that the therapeutic principle of combating anaerobes by combating anaerobic conditions cannot be regarded in any sense as adequate."

This is a paradoxical statement which at once arrests and holds the attention, but the practical fact to be borne in mind is that the anaerobe is at once inhibited in its growth by the increase of oxygen tension above a very low level, and that its so-called aerobic growth depends on the establishment of conditions which maintain that low tension.

In connexion with the conditions which are usually associated with anaerobic technique it would appear that bacteriologists have been deluded for a long time into thinking that by covering a culture medium with a layer of paraffin or lanoline the aqueous layer is protected from the gases of the atmosphere. Vernon, as quoted by Bayliss in his "Principles of General Physiology," found that oxygen was 4·5 times more soluble in fats and oils than in water. Bayliss directs attention to the futility of attempting to protect aqueous solutions from the gases of the atmosphere by layers of oil, as is done in Hesse's method. The anaerobic conditions desired can be just as well obtained by employing *high narrow* tubes of freshly sterilised media.

We have made a certain number of experiments which confirm Bayliss's statement in every particular. Sloped tubes covered with paraffin do not grow the bacillus any better than do similar tubes unprotected by the fatty layer. If the paraffin layer is of any real value, it probably plays its part in diminishing convection currents in the aqueous layer.

Summary.

With a properly prepared culture medium, *B. welchii* will grow freely in open narrow tubes. The addition of any solid matter is not necessary to produce this apparently aerobic growth.

No segregation of organisms is necessary, for the bacillus grows vigorously when nitrogen containing 1 per cent. of oxygen is bubbled continuously through the tubes, but the organism is very sensitive to, and its growth is inhibited by higher proportions of, oxygen. For this reason the so-called aerobic growth is best obtained in narrow tubes of freshly sterilised fluid from which the air has been partly expelled by the heat of sterilisation.

TREATMENT OF WOUNDS BY A SOLUTION OF SOAP IN THE CASUALTY CLEARING STATION.

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AND
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A SHORT time ago Colonel Cuthbert Wallace, A.M.S., brought to our notice that some French surgeons were using soap solutions in the treatment of wounds, and suggested that we should try this method.

During the last few months we have used this dressing on 68 cases. During the same period we have treated similar cases with other antiseptics, including eusol, hydrogen peroxide, and B.I.P.P., with the result that we are using more soap, and less of the other antiseptics.

A sample of common yellow soap was analysed and found to contain per cent.: Water, 24·6; fatty acids, 63·0; combined alkali, 4·6; free alkali, nil; impurities, 7·8. This was considered suitable, and it was found possible to make a 5 per cent. solution of it.

The first cases tried were small open muscle wounds in which there was no gas gangrene. After being opened up, and metal and cloth removed, the wounds were dressed with sterile gauze soaked in this solution. The dressings were left undisturbed for two, three, or four days, provided there was no rise in temperature. At the first dressing the most striking features were less pain, the unusually clean appearance of the wound, absence of pus, and the redness of the whole of the tissues—the muscle in particular.

Encouraged by the success in regard to small wounds, we tried the same treatment in larger and deeper wounds, using Carrel's tubes in the ordinary way. Here we found a difficulty with the common soap solution; it was found to be too gelatinous to flow at all well down the tubes. A 2½ per cent. solution of the B.P. soft green soap was then tried, and found to be quite satisfactory.

The results continued to be most encouraging, and compound fractures of the bones of the hands and feet, also the long bones, including the femur, were so treated successfully. Cases of penetrating wounds of the knee-joint were treated by this method, the joints being irrigated and the capsule and external wounds closed. The cases did very well.

In cases of gas gangrene the results were usually good, but in one case (buttock) a gelatinous film or glaze was formed over the affected muscles, and the treatment had to be discontinued in favour of hydrogen peroxide.

In the case where a man had similar wounds of both calves the soap solution with Carrel's tubes was tried on one side, and another antiseptic, also with Carrel's tubes, on the other. Both wounds did well, but the side treated with soap was not dressed as frequently as the other side, and when the patient went to the base his soap-dressed wound looked more like a granulating wound, and more like one that it would be safe to close than the other.

The points claimed for the soap solution dressings are that they clean up a wound quickly, the dressings are much less painful than ordinary dressings, there is a saving of labour as the dressings need only be changed every three or four days, the solution is easily procured, easily made, and cheap.

Soap Dressings.

Superficial wounds	73	Joints	30
Uncomplicated severe wounds involving muscle	160	Amputations	14
Compound fractures—		Vessels	17
Fractures	83	Nerves	6
Partial fractures	22		

Notes of Cases.

CASE 1.—Gunshot wound of left arm, compound comminuted fracture of humerus. Date of wound, July 1st, 1917. Re-dressed eusol, dressing requiring surgical treatment. Injection of antitetanic serum, first, 750 units, on the 1st. Morphia gr. ⅓ 12 o'clock same day. Relg. C.E. At 3 P.M., pre-operation hypodermic injection of atropine gr. 1/100, operation by Captain Dixon; anæsthetic, closed ether, Captain Lloyd. A large portion of the biceps and triceps muscles was excised. A large piece of isolated bone was removed as well as dirt and khaki cloth. Six Carrel tubes were inserted; soap dressing; Thomas splint. The temperature rose to 102·8° F. on the evening of the second day, was not above 100° after the third day, and fell to normal by the seventh day.

CASE 2.—Date of wound, June 28th, 1917. Compound comminuted fracture of left humerus. 29th: Antitetanic serum, 500 units; morphia gr. 1/4 and atropine gr. 1/100 at 2.30 A.M. Operation by Captain Dixon at 3.30 A.M. Anæsthetic, closed ether, Captain Lloyd. Loose bone removed; hæmorrhage arrested; Thomas splint; soap dressing: three Carrel tubes. The temperature slightly subnormal after operation, gradually rose to 102·8° F. by the 30th, thereafter ranging from 102° to just above normal until July 8th. On the latter date it was 100·4° in the evening.

CASE 3.—Gunshot wound of left leg; compound comminuted fracture of tibia and fibula. Operation on June 20th, 1917. Wound opened up. Three pieces of shrapnel removed, also a piece of isolated bone. Wound swabbed out with soap solution and sutured. Soap solution. On the 20th the temperature was 100·6° F. After this it ranged between 100·4° and normal, being 100° ou the 27th and normal on the 28th.

CASE 4.—Multiple shell wounds; compound comminuted fracture femur; under care of Captain Bates. Patient admitted at 1.30 P.M. on —— 28th; temperature 100°. Morphine 1/4 gr. hypodermically. Operation; Carrel-Dakin tubes, soap solution. On the 29th the temperature rose to 101·8° and on the 30th to 103·6°; oleum ricini given. Temperature normal on morning of 31st, rising to 102·6° in evening. Wound dressed. From —— 1st to 4th temperature swinging from 102·2° to 100°. On 4th wound dressed. On the 5th temperature lower; urine tested and found normal. On the 7th wound dressed; antitetanic serum 500 units; temperature 100·8°. Then up to the 18th the range was between 100° and subnormal; and on the 11th patient taken to theatre at 6 P.M. Morph. tart.

CASE 5.—Compound comminuted fracture of right femur; secondary closure; soap solution; under the care of Captain Bates. The temperature on May 24th was subnormal; 25th–29th, from 101·4° to 99°; May 30th–June 12th, 99·8° to 97·4°; June 13th, 100·4°; 14th–25th, 99° to 96·8°; 26th–28th, 99·4° to 97°.

PROCIDENTIA RECTI AND ITS TREATMENT.

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UNDER the title of prolapse of the rectum are included conditions differing widely pathologically and clinically. On the one hand, there is the condition where the loose mucous membrane is extruded as a ring generally only when there is an action of the bowel; this condition is usually caused by the straining of chronic constipation, and is frequently associated with internal hæmorrhoids. On the other hand, and it is of this condition that I wish to speak, the whole rectum is thrust completely outside the anus.

Description of Condition.

The protrusion varies from 4 to 7 or more inches in length and is about 2½ to 3 inches in diameter at its base; one of the most striking features is the remarkable degree of dilatation of the anus, the external sphincter being completely paralysed, so that if the mass is reduced the anus remains in a very patulous condition. The mass presents the transverse folds of the mucous membrane, with the opening of the bowel at its apex. The mucous membrane may be normal in appearance, or inflamed and ulcerated from friction if it is constantly down; the patient's state is then pitiable in the extreme, there is a profuse discharge of mucus with tenesmus and the frequent passage of a small amount of fæcal matter.

The manner in which the bowel is extruded through the patulous anus is of importance as indicating the nature of the morbid process; it will be noticed on asking the patient to strain that it is the lowest part of the bowel that comes down first, whereas if the condition were due to an intussusception or invagination at a higher level, the lowest part of the mucous membrane would be the last to come outside, and then only in extreme cases.

Although procidentia is met with not infrequently in weakly children with chronic diarrhœa, it is by no means the formidable affair that it is in the adult, and with few exceptions is readily cured. I shall refer later to the treatment of these obstinate cases in children.

In all the cases that have come under my observation the patients have been women, otherwise healthy, between the age of 35 and 50 years (except one aged 27), and in most a similar history was obtained—"that the condition had existed for years," "as long as I can remember," or "since childhood."

Causation.

A great deal has been written on the causes of procidentia recti and procidentia uteri. That the determining factors are not the same I think there can be no doubt, for whereas the latter condition in its various degrees is extremely common, the former is a rare condition. I have only met with 7 cases in the course of more than 18 years at a women's hospital. Nor do we find the two conditions usually associated. I have, however, placed on record the remarkable case of a young woman of 27 in whom both conditions existed in a marked degree, and Lynch recorded a similar case in a woman of 71 years[1]; doubtless similar cases could be found in aged patients in those storehouses of pathological curios, the Poor-law infirmaries.

Further, the trouble is not limited to those who have borne children. Two of the cases recorded in this paper had not had children. That complete rupture of the perineum is not sufficient to produce procidentia of the rectum is also evident. I have seen patients in whom a complete rupture of the perineum had existed for years, and although the mucous membrane of the rectum was extensively exposed there was no falling of the rectum.

The essential condition for the occurrence of procidentia in the absence of any condition which drags or presses the bowel down appears to be undue mobility of the rectum either as a congenital defect or from stretching of the supporting structures. I recently performed hysterectomy (Case 5) for menorrhagia due to a fibroid, when I found that the mesentery of the pelvic colon and sigmoid were of unusual length; that of the former being fully 4 inches long at the bottom of Douglas's pouch, and as not more than 5 inches of the prolapsed rectum had been removed there was no doubt as to its unusual length, which I regard as a congenital abnormality.

The history, as I have already pointed out, is suggestive that in most of the cases the trouble had existed in childhood, and in one case it was definitely so stated; so that I am inclined to regard these cases as instances of the condition in childhood persisting into adult life, and consider that they are brought about by overstretching of the supporting structures of the rectum in early life.

Treatment.

I have operated on quite a number of cases in children in which, in spite of careful treatment extended over a long period, the bowel continued to come down. These inveterate cases are best treated by drawing down the prolapse to the fullest extent and excising a wide ellipse of the mucous membrane extending from the anal margin to the apex of the prolapse and suturing the edges with catgut sutures, which are embedded in the wall of the rectum, so that as they are tied the rectal wall is pleated; the procidentia is then pushed back and the bowels are kept confined for a few days, with precautions against straining when they are allowed to act. This operation, which is easily performed and entirely devoid of risk, is in my experience uniformly successful.

Many operative procedures have been practised for the cure of procidentia in the adult, and from their number and variation, apart from definite evidence of failure, it is suggestive that none of them are very reliable in effecting a cure. It is, perhaps, only necessary to mention, in order to condemn such methods as scoring the mucous membrane with the cautery or with a cauterising acid, these methods are in no way curative and only cause additional suffering.

Various plastic methods have also been devised. By those who regard the condition as a hernia from the pouch of Douglas the method of inserting rows of purse-string sutures in the peritoneum of the pouch of Douglas (through an abdominal incision), so that when they are tied the pouch is obliterated, is utilised. I have no experience of the operation; but if the view that I have advanced that the trouble is due to abnormal mobility of the rectum is correct, it would appear that an operation of this nature would not suffice to prevent the bowel from slipping down.

Other surgeons, by a transverse incision between the anus and the coccyx, have exposed the posterior wall of the rectum and have inserted a series of sutures into it; the ends, after reduction of the bowel, are passed through the skin on each side of the sacrum, and are tied over a pad of gauze in this position.

Ball, after opening the abdomen, drew up the prolapsed rectum until it was taut; an incision was made in the peritoneum of the left iliac region and the bowel sutured to the fascia and muscle, the peritoneum being stitched to the bowel. I have adopted this method on one occasion, in the case of the young woman referred to, in whom there existed complete procidentia recti et uteri, the latter being at the same time fixed by ventrifixation; in this case the result was satisfactory, until after a second parturition, subsequent to the operation, when the uterus began to come down again, and there was also a slight tendency to prolapse of the bowel again. Tuttle performed a similar operation, but attached the sigmoid to the anterior abdominal wall.

It is, I believe, generally admitted that all these methods at times fail to effect a permanent cure, just as similar operations on the uterus are by no means uniformly satisfactory; we have, however, at hand another method which, I believe, is invariably successful—i.e., excision of the whole mass with suture of the bowel to the skin.

I have now performed this operation on six occasions, details of which are given below, the earliest as long ago as 12 years, and I have been able to keep some of the patients under observation and to be able to judge how satisfactory are the remote results; not only is the prolapse permanently cured, but what is even more important is that the overstretched sphincter gradually recovers its power, although a considerable interval may elapse before this is complete.

That the operation is of a rather formidable nature must be conceded, and it may be that this cause together with the risk of sepsis have deterred surgeons from largely practising it. It is surprising, however, how slight the

[1] New York Medical Journal, 1909.

disturbance is, the patient convalescing as rapidly as after a Whitehead's operation for piles. The danger of sepsis has also been overrated; in the six cases that I have operated upon four healed per primam; in one there was a little suppuration, and a small abscess discharged at the posterior anal margin, but very little delay was occasioned, as the wound was healed in three weeks. In only one case was there any real trouble from this cause, in which an abscess formed in the recto-vaginal septum and discharged into the bowel; in this case suppuration continued for some months and eventually necessitated a further operation for the cure of what was practically a blind internal fistula.

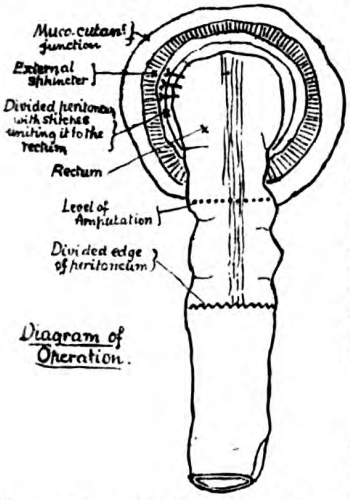


Diagram of Operation.

Three sutures only are shown uniting the peritoneum to the rectal wall. A continuous suture is usually employed.

Description of Operation.

In performing the operation it is important to be expeditious, particularly in the early stages, as bleeding is rather copious. An incision is made completely round the bowel at its junction with the skin, as in Whitehead's operation. The mucous membrane is dissected up and the stretched sphincter is defined and separated from the mass from above down, the muscle fibres being carefully preserved. Having secured the many bleeding points, the incision, at a distance of 1 inch from the skin, is deepened through the wall of the bowel till the peritoneum is reached and opened transversely. Forceps are applied to the anterior edge of the peritoneum and a piece of gauze is inserted into the opening to prevent the intestine from prolapsing and blood from entering the cavity. The remainder of the circumference of the wall of the rectum is then divided and the vessels in the mesorectum secured. The invaginated portion of the bowel can then be turned downwards so that the mucous membrane becomes internal.

Having drawn down all the slack bowel, I apply a rubber-covered clamp to it and cut the mass away by dividing the bowel below the clamp at the level at which it is to be stitched to the skin. The amount removed varies from 5 to 15 inches. The next step is to suture the divided peritoneum to the drawn-down bowel at about 2 inches above its divided end, and this is facilitated by the clamp, which not only holds the bowel securely but arrests the bleeding from the cut end and prevents the escape of any contents.

This being completed, the final step of the operation is to suture the cut edge accurately to the skin. This I find is more readily accomplished by stretching the lumen of the bowel gently and then inserting four sutures at the four opposing points of the circumference. These sutures should be passed deeply, passing outside the external sphincter and through the skin so that when they are tied the sphincter is approximated to the bowel; each quadrant is then accurately adjusted to the skin.

Notes of Cases.

CASE 1.—Aged 41, married, no children. Was admitted to the Hospital for Women in 1905. Twenty-one years before she had had an operation for the cure of the trouble. Control of the sphincter returned within five weeks of the operation under faradic treatment. This patient has been under constant observation since 1905. She returned some three years after with a large fibroid, for which a total hysterectomy was performed. Some year or so later she again returned with a ventral hernia owing to suppuration of the abdominal wound at the time of the hysterectomy and again two years later with acute appendicitis, requiring immediate operation.

This patient, who was last seen in 1916, has had no further trouble with the rectum. There is complete control of the sphincter, and on passing the finger into the rectum all that can be felt is a linear scar about ½ an inch inside the anus.

CASE 2.—Aged 39, married, eight children. Admitted in 1905. The trouble had existed for many years. 7 or 8 inches of the bowel came down; 15 inches were removed. Paralysis of the sphincter persisted for a long time after the operation.

CASE 3.—Aged 49, married, one child. Admitted in 1912. The history states that the trouble had been present two years only; the protrusion was 15 inches in length. In this case slight suppuration occurred.

CASE 4.—Aged 38, married, no children, admitted in 1915. Prolapse had been present nine years and was very painful to replace. In this case the incision around the mass was made at ¾ inch above the cutaneous margin. There does not appear to be any advantage in making the incision in this position; in fact, the hæmorrhage in this case was unusually severe.

CASE 5.—Aged 36, unmarried. Seen in consultation with Dr. Savill, of Bexhill in 1915. The trouble had been present for many years. It was in this case that troublesome suppuration arose in the recto-vaginal septum, necessitating a further operation some months later.

CASE 6.—Aged 46, married, two children. Admitted in 1917. The trouble had existed for years. The uterus was at a low level, but it was situated in a forward position.

CASE 7.—Aged 27, married, one child. This case, which had existed since childhood, was recorded in THE LANCET* and was treated by fixing the rectum in the left iliac region and the uterus by ventrifixation. This patient has since had two normal confinements at Queen Charlotte's Hospital. There was a return of the falling of the uterus after the second, and the patient stated that there was a tendency to a return of the rectal trouble, but I could not get her to extrude any bowel on examination.

Wimpole-street, W.

REPORT ON

EXAMINATIONS OF FÆCES OF CHINESE LABOURERS.

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(*Report to the Medical Research Committee.*)

As numerous reports at different times have shown that Chinese are largely infected with intestinal parasites, it was decided to carry out an examination of several hundred Chinese labourers. These men had nearly all come from Northern China, and a recent report[1] has shown that a large percentage of the people of Southern China are infected with the "hookworm." The question as to the possibility of these northern Chinese being infected arose, and the possibility of their spreading this infection. It was also decided to examine the stools of these men for the presence of typhoid or paratyphoid organisms.

Procedure.—To obtain the specimens a small cardboard plate was given to each man, and he was instructed to defecate upon it at the latrine. A small portion of fæces was then picked up with the small spoon supplied with the specimen bottle, and placed in the bottle, which was then tightly corked. These bottles had been sterilised previously. The sample was then taken to the laboratory for examination. Only 25 were collected each day, for comparatively little time could be spared for this work without interfering with the necessary routine work of the laboratory. For bacteriological examinations the technique outlined by one of us[2] was used—i.e., Endo's plates, followed by Hiss sloped-agar tubes, and later agglutination of suspicious cultures.

To make the examination for ova in the specimens as regular as possible only one preparation from each was made and examined unless the first one was entirely unsatisfactory. It is probable that a much higher percentage of infections would have been found had several slides from each specimen been examined.

It was hoped to examine 1000 men indiscriminately, but as they were detained sometimes for a few hours only before going overseas it was impossible to carry this out without extending the work over a long period of time. The results of the examination of 340 specimens is considered of sufficient interest to be reported. A table is attached which

Table showing Percentages of Parasitic Infections Found.

Diagnosis.	Number of infections.	Percentage.
Ascaris lumbricoides	225	88
Ankylostoma duodenale...	38	11
Oxyuris vermicularis	7	2
Strongyloides stercoralis...	3	1
Trichiuris trichiura...	15	4

* THE LANCET, 1913, ii., 136.

[1] Journal of A.M.A., June 23rd, 1917, lxviii. (No. 25), 1888.

[2] Brit. Med. Jour., August 25th, 1917.

shows the different infections present with percentages. It may be noted that no *tænia* infections were found The sputum of several cases showing a considerable amount of blood was examined for paragonimus ova with a negative result.

The specimens were not examined carefully for amœbæ unless blood and mucus were present. Only two cases of amœbic dysentery were found and these were acute, and the stools, which were very frequent, contained very large amounts of blood and mucus.

Bacteriological examination of 340 stools showed the presence of paratyphoid A in two of them. The men had no symptoms.

Summary.

The importance and seriousness of hookworm infection as a predisposing cause of many seemingly unrelated acute infectious diseases is well known.

Foster and Sinclair in a recent article[3] declare that among certain Alabama troops on the Mexican border, where 39·9 per cent. of the men were infected with hookworm, the high mortality from infectious diseases was undoubtedly due to this infection.

In California rigid quarantine measures are taken with immigrants from the Orient, and all are examined, among other things, for the presence of hookworm infection before being allowed to proceed.

It is stated by Rosenau[4] that in Bilibid Prison, Manila, P.I., when the Americans took it over the death-rate was 234 per 1000. This high percentage by ordinary sanitary measures was reduced to 75 per 1000, and it was only when the hookworm question was investigated and prisoners were thoroughly treated for this condition that it was reduced to 13·5 per 1000. A large number of these examinations at Bilibid Prison were made by one of us (F B. B.) while on the staff of the Bureau of Science, Manila, and the comparatively sudden change from a high to a low mortality rate was notable.

The ease with which the infection spreads in non-infected districts is remarkable, and if the percentage of infection among 340 Chinese examined indiscriminately is any indication of the total number of infections among them, among 100,000 there will be at least 10,000 "soil polluters."

The winter and early spring are the seasons when pneumonia, measles, &c., appear, and the possibility of these diseases appearing among the Chinese is not remote. Hookworm infection should be taken into account as a devitalising agent, and thus a predisposing factor in the seriousness of these conditions.

Conclusions.—1. Parasites are common in the fæces of Chinese labourers. 2. Hookworm infection is very prevalent and calls for attention. 3. Paratyphoid A carriers may occur among the Chinese.

Note.—During the month 39 naso-pharyngeal cultures were made from Chinese, and 2 were found positive for meningococci. Agglutination tests proved one to be type I., the other type II.

Incidental expenses connected with this inquiry have been defrayed by a grant from the Medical Research Committee.

[3] Journal of the American Medical Association, lxix. (No. 6), 431.
[4] Rosenau, M. J.: Preventative Medicine and Hygiene, ed. 2, 1916, p. 132.

THE LATE MR. ETHELBERT HOSKING, M.R.C.S. ENG., L.S.A.—Mr. E. Hosking, who died at his home at Turner's Hill, Sussex, on Oct. 22nd, was, until a few years ago, one of the best-known practitioners in North Sussex, where he had practised for over a quarter of a century. A son of Professor William Hosking, Professor of Architecture at King's College, London, he was born in London on Nov. 17th, 1846. He was educated at King's College School and received his medical training at King's College Hospital, qualifying in 1871. In the following year he was appointed resident medical officer at Bloomsbury Dispensary, and from 1874 to 1880 was assistant medical officer at the Surrey County Asylum at Tooting. For a time also he was assistant house surgeon at Salop Infirmary. Afterwards he went to Turner's Hill where he soon gained an extensive practice and took up several public appointments, among them being that of medical officer of St. Saviour's Middle Class School at Ardingly. He retired in 1912, and was then placed on the commission of the peace for the county. He married Annie Sophia, daughter of Dr. Nance, of Eccleshall, Staffordshire, and his widow survives him.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Resumed Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis.

A MEETING of this society was held on Nov. 19th, Sir STCLAIR THOMSON, the President, being in the chair, when the discussion on the above subject was resumed.

Sir R. DOUGLAS POWELL said that he was impressed by Dr. Lister's warning against the tendency to exaggerate the direct agency of infection in the production of tuberculosis. If there were no dirty surroundings and bad habits of life the infection of tuberculosis would almost cease to be operative. The ultimate object of all treatment of tuberculosis was to help the patient to secure immunity, and by immunity he meant a power of resistance amounting to a safeguard against fresh attacks of the disease. Some patients would acquire immunity without any orthodox direction or treatment, post-mortem observations revealing many such cases. Some attained a practical immunity who could by no means be regarded as cured of pulmonary tuberculosis. He had seen many people with considerable lesion in one lung for many years with chronic cough and expectoration, more or less bacillus-laden, who seemed immune from fresh attack, and ultimately died of some other disease, amongst which cancer and some gouty affections would, he thought, be found relatively prevalent. The disease in such cases was localised and circumscribed by fibrosis. Many cases did well without sanatorium treatment; the margin of difference in favour of sanatorium over general hygienic management was much less defined than one might expect. On the whole his firm opinion was that sanatorium treatment was, without doubt, the best, not only in the interests of the community but in properly chosen cases, also of the individual patient. He thought it would be advisable to have more subdivisions in sanatoria and suggested (1) a hospital department for acute cases requiring constant nursing, care, and medical treatment; (2) a department for advanced cases; (3) a sanatorium proper with full equipment for cases selected from the two preceding and for incipient and quiescent cases in which immunity was in sight; athletic and industrial exercises would be provided in this department; (4) associated bungalows and chalets in groups for convalescent and after-care cases. Referring to the value of after-treatment, he thought that the patients' prospects depended largely on their own intelligence and care, but also on the conditions of life to which they returned. He thought insurance might help, and that some arrangement might be made whereby employees, when definitely attacked with tuberculosis, should receive a certain portion of their insurance money which would enable them to undergo prolonged sanatorium treatment, and then seek a more outdoor and healthy occupation.

Dr. ARTHUR LATHAM said that both the public and the profession paid too much attention to the infectivity of the disease. The von Pirquet test showed that 2 per cent. of children of 2 years had had tuberculosis, 55 per cent. of those of 15 years, and pathologists said that by the age of 30 every man and woman had evidence of tuberculous trouble. Few could say that a patient had contracted the disease from a certain person, as might be said with regard to scarlet fever, for example. If the defence was undermined by definite factors the disease immediately became active. These factors were *strain* and *stress*. The increase of tuberculosis during the war could not be explained by increased infectivity, but could be explained by the increased strain and stress. He thought sanatorium treatment was the best we had; it regulated the daily stress and exercise. We should not fill our sanatoria with those who had a right to be there, but with those who would do well. We could only remove the disease by removing the strain and stress of working people; until this were done the results would be as unsatisfactory as at the present time.

Sir ARTHUR NEWSHOLME said that during 1916 there were 53 000 deaths due to tuberculosis in this country. Sanatorium treatment was but a link in the chain of measures of treatment. The first was *notification*, which was enforced in 1908. By this means (*a*) the medical officer of health

could get control of the environment of the patient; (*b*) light was thrown on the influence of alcohol, as to whether it (1) increased the opportunities for infection or (2) lowered resistance; (*c*) coöperation between the medical officer of health and the private practitioner was possible. The work of the tuberculosis officers was of value in consulting with the general practitioner and in examination of contacts. By examining the relatives it was often possible to get cases early. Sanatoria were of great value educationally, diminished tendency to relapse, prolonged working life, and decreased the danger to the public. Patients often did extremely well in huts in the back garden; it was better for the patients and safer for the families. The selection of cases for sanatorium treatment should be on purely medical grounds. Infectivity and environment were factors which worked together; both were necessary to the production of disease. The resistance and the dosage varied. He considered massive infection of more importance than the other speakers had done. The object of treatment was the expeditious recovery of the patient and the prevention of infection of others.

Dr. J. J. PERKINS spoke of the causes of the failure of sanatorium treatment. I. Cases of tuberculosis were not sent up at a sufficiently early stage. Sometimes diagnosis was delayed and milder measures were first tried; sometimes—from kindness—the patient was not told of his illness in plain terms. Early diagnosis was required, early speaking out, and the insistence on adequate early treatment. He had seldom met with a refusal to enter a sanatorium when it was possible in the early stages confidently to hold out hope of recovery. He suggested that we should push our diagnosis further back, and send not only patients with tubercle bacilli in sputa to a sanatorium but especially the cases of early hæmoptysis, the tubercular pleurisy, and the case of progressive emaciation and debility, with some pyrexia but few physical signs. II. Further limitations were to be found in the environment to which the patient returned. He hoped much from change of occupation to an outdoor life which the more intelligent should be able to make. The National Association for the Prevention of Consumption was founding a colony with the intention of giving these men a thorough grounding in the various branches of outdoor and farm work in the hope of enabling them to settle on the land.

Dr F. R. WALTERS was firmly convinced of the great value of sanatorium treatment. The only question was as to how far it could be replaced with advantage by dispensary or home treatment. Restoration to health in a sanatorium was usual if the case was suitable and the treatment early, thorough, and prolonged. Suitable cases were those with limited lesions, only moderate constitutional disturbance, no serious complications, originally fairly good constitution, and without history of massive or virulent infection. It was not usually possible to keep a non-wealthy patient in a sanatorium until he was cured. Three or four months might be needed before graduated exercise was even begun. Relapses were usually caused by disregard of simple rules of life, by late application for treatment, or by premature return to unfavourable conditions. To prolong the sojourn under more favourable conditions health colonies were needed. He called attention to the need for physiological subdivisions, according to febrility and exercise capacity, under the purely anatomical groups, as done in the Surrey County Council statistics. From these it appeared that if patients applied for treatment before they had lost their full working capacity, two-thirds would be fit for full work 12 months later, whereas of those who waited until they were feverish five times fewer would have full working capacity a year later. Physiological disturbance was of more importance in prognosis than anatomical extent of the lesion. Shorter expectation of life in the tuberculous did not show that sanatorium treatment was useless—it might result from a poor constitution quâ tubercle, or from unsatisfactory after-conditions. Dr. Walters urged the importance of prompter and more systematic treatment of the febrile tuberculous; health colonies to bridge the gap between sanatoria and full work, more universal training in sanatorium ways, and greater continuity of treatment.

Dr. B. A. RICHMOND said that he had urged the Bermondsey borough council to take municipal beds for the treatment of tuberculous patients. During 1911–12–13 15 cases were sent to the Maitland Sanatorium. In June, 1914, only seven deaths had been reported. Three cases were in close touch with the medical officer four years after discharge from the sanatorium. In each case the occupation had been changed. According to the medical officer's opinion the great difficulty lay in the inability to get suitable occupation, two to three months being spent in a state of semi-starvation looking for work at a time when good food and care were required. The way to keep up the immunity gained in a sanatorium was to improve the social condition of the patient so that he could take advantage of the education received there. There was need to awaken the interest of practitioners in this work. The value and limitations of sanatorium treatment should be settled, and it should be made clear that everyone was not suitable for sanatoria and that the sanatorium was only one link in the chain.

Mr. H. KINGSLEY WOOD, chairman of the London Insurance Committee, said that this was not a single but a mixed problem, and together with housing, maternity and child welfare, &c., must be treated as part of the great problem of national health. Until there was a Ministry of Health to coördinate all authorities the money now spent was largely wasted. Short periods at a sanatorium were useless; the patient returned to a worse stress than when he left.

The Right Hon. C. W. BOWERMAN, M.P., secretary of the Trades Union Congress, said that all were aware of the great value to workmen of sanatorium treatment. If those skilled judges, men in charge of institutions, were enabled to follow men discharged as cured or nearly cured into their ordinary domestic surroundings, one of two things would happen—their hearts would be broken or they would help to form a band of men determined to improve the housing accommodation in this country.

The discussion was adjourned till Nov. 26th, when Dr. A. NIVEN ROBERTSON, Dr. G. A. CRACE-CALVERT, Dr. W. CAMAC WILKINSON, Dr. D J. CHOWRY-MUTHU, Dr. HENRY ELLIS, Dr. JANE WALKER, Dr. JOHN SORLEY, Dr. H. J. CARDALE, and Sir WILLIAM OSLER will take part.

Reviews and Notices of Books.

1. *Physical Remedies for Disabled Soldiers.* By R. FORTESCUE FOX, M.D. Lond. With 3 plates and 84 illustrations. London: Baillière, Tindall, and Cox. 1917. Pp. 277. Price 7*s.* 6*d.* net.
2. *Massage: Its Principles and Practice.* By JAMES B. MENNELL, M.A., M.D., B.C. Camb. With 135 illustrations. London: J. and A. Churchill. 1917. Pp. 259. Price 8*s.* 6*d.* net.

1. IN the past the various physical methods of treatment, massage, manipulations, exercises, baths, heat, light, electricity, have been left very largely to the specialist, the methods adopted and the results attained being comparatively unknown and unrecognised by the profession at large. Too often the treatment has actually been left in the hands of the unqualified practitioner of the particular physical method, without even expert direction by a medical man. The inevitable result has followed. Hospital departments for physical treatment have in many cases become the dumping ground for chronic, difficult, and often hopeless cases, so that these branches of work have not attracted the best assistants, and the work has become discredited. Claims have been made that are not justified by results, and in many cases the whole system has tended to develop into quackery. Physical treatment early came into prominence in the surgery of war. First it became obvious that a very large body of masseuses would be required; these have been obtained and their work has been invaluable. Then, first in France at the Grand Palais, physical remedies of all sorts were collected together and utilised as combined methods of treatment on the same patient, a rational course which has been still further rationalised in the orthopædic hospitals in this country by the combination of physical methods of treatment with surgical clinics in the same institution. Dr. Fortescue Fox was responsible for a campaign which ended in this extension of the combined method of physical treatment to England. His book is welcome as giving a brief but clear and rational exposition of the various physical

methods, their indications, and the results to be expected so far as our present experience goes. Dr. Fox has himself written the section on hydrological methods and most of the remainder of the book, but he has been assisted by such authorities as Professor Tait McKenzie on mechanical methods and exercises, Dr. J. B. Mennell on massage, and Dr. F. Hernaman-Johnson on electrical treatment. Naturally in such subjects, which are comparatively new to the profession at large, there will arise criticism of detail. For example, the mechanical exercisers, usually named after Zander, which Dr. Fox describes, have found but few advocates in this country. But it is only right that the knowledge of these methods should be widely diffused, so that everyone may try them and form their own conclusions, and Dr. Fox makes no miraculous claims for any method but only asks for their trial.

2. Massage has few text-books in this country, and perhaps not one that is really first-class. Dr. Mennell's book should fill a long-felt want. It treats of massage as it should be treated, as a means to an end. Massage in the treatment of injuries is only a step towards the attainment first of passive then of active movements, leading on finally to treatment with active exercises with or without apparatus. Dr. Mennell deals with it in this spirit, he devotes a considerable space to treatment by exercises, and he describes his apparatus, which is certainly a model of compactness and at the same time of simplicity. In this work again there is room for criticism, and it is to be hoped this will come. It is time that the whole profession studied massage; it can be studied in theory in Dr. Mennell's book, a practical observation of patients under treatment and of results will then lead on to the formation of individual opinions, not upon the value of "massage" as a therapeutic method, but upon the value of the different methods included under this generic term.

Experimental Pharmacology. By DENNIS E. JACKSON, Associate Professor of Pharmacology, Washington University Medical School, St. Louis, U.S.A. London: Henry Kimpton. Pp. 536. Price 20*s*.

TWENTY years ago laboratory instruction in the medical schools of the United States was confined to the departments of anatomy and pathology, except in one or two of the most advanced centres. How far medical education has progressed from the didactic lecture which then formed the staple of instruction is shown by this elaborate description of the technique of pharmacological experimentation. The author gives no less than 158 experiments, more than one half of them on mammals, which may be used to elucidate the action of drugs; not all of these are intended to be given in any one course, the instructor is given a wide choice of illustration. The directions are simple, accurate, and detailed, so that the student can readily follow them; some of them may appear a little startling in present conditions, as where the student is advised to give a dog half a pint of cream as a preliminary to the study of the lymph circulation. Many of the more difficult operations are obviously intended to be demonstrated by the teacher rather than performed by the student himself; for example, few students can be expected to insert cannulæ into the thoracic or the pancreatic duct without much previous experience in operations of this kind. In this country this manual can hardly be used by students under the regulations on experiments on animals. But it may be highly recommended to teachers of pharmacology, for it offers a wealth of experiments which may be used to illustrate lectures, and the care with which these are described renders it easy to perform those which may be selected. It deserves attention also from investigators in the fields of physiology, pharmacology, and pathology for its review of reliable methods and for many useful hints drawn from the author's experience. It contains nearly 400 illustrations (24 full-page colour plates), some of which are superfluous, but others presenting the anatomical relations and the successive steps of the operations are extraordinarily useful. As examples the series of drawings of the exposure of the salivary ducts and nerves may be cited. When these are compared with the single woodcut which is generally supplied of the operation, the advance may be appreciated. Altogether this book promises to lighten the labours of many teachers, and will prove almost indispensable in laboratories of experimental research.

The Method of Enzyme Action. By JAMES BEATTY, M.A. M.D. Dub., D.P.H. London: J. and A. Churchill. 1917. Pp. 143. Price 5*s*. net.

THE hypothesis put forward by the author in these pages as to the mode of action of enzymes has at least the merit of simplicity. Without dealing completely with his summary given in the last section of the book, we may say that his general conclusions is that the whole of the chemical action of enzymes may be reduced to the action of hydrogen and hydroxyl, and this, he adds, is to be expected, as the two substances everywhere present when life first developed were water and air. The use of enzymes, he continues, is to control the rate and the sphere of naturally occurring reactions. The former is secured by increasing the number of the active H and OH radicles; the latter by limiting them to definite points to which the substrate of the reaction is also attracted. It is suggested that in the light of his hypothesis it ought to be possible to manufacture enzymes by adapting the constitution of any given enzyme to a congenial substrate or environment. Dr. Beatty's work should attract the attention of all workers in this field. It is a most interesting contribution on the subject that invites many directions of research, whether it does or does not some day culminate, to use the author's last words, in "the synthesis of life itself."

New Inventions.

THE ADMINISTRATION OF SALINE SOLUTIONS.

Lieutenant-Colonel P. Fiaschi, A.A.M.C., has called our attention to a method for the rapid intravenous administration of prepared sterile saline solution, or of sterile gelatin saline solution (Hogan's solution), in the field. "The difficulties of preparing a surgically perfect saline solution," says Lieutenant-Colonel Fiaschi, "and of being able to rapidly give this intravenously to a number of cases demanding such a procedure, either during the rush of an engagement, or even to a few cases in periods of comparative quiescence in the fighting sector, are reserved only for those of us who have attempted this rational and physiologic method of treatment on the Egyptian Desert, at Gallipoli, or at the Somme." By his method the solution is supplied in bottles with automatic stoppers, each holding 500 c.c., together with a siphon and intravenous cannula apparatus. These are shown in the illustration. The bottle is warmed to blood heat in a basin of water, the stopper removed, and the cannula apparatus fitted to the mouth of the bottle. The solution is allowed to flow through the cannula by inverting the bottle. The method of use is quite simple, and it is easy to double the quantity of fluid administered by using two bottles in place of one.



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DEVON AND EXETER HOSPITAL.—At the last meeting of the governors of the Devon and Exeter Hospital it was reported that the deficit balance against the charity now amounted to £2100; the President (Sir E Chaning Wills) gave £500 towards reducing this deficiency. Two years ago Sir E. Chaning Wills gave £1000 for the funds of the institution.

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THE LANCET.

LONDON: SATURDAY, NOVEMBER 24, 1917.

The Value of Sanatorium Treatment.

SANATORIUM treatment has now been on trial in this country for about a generation, and there has been time to form a considered opinion upon its merits. Although the debate at the Medical Society of London on the Value and Limitations of Sanatorium Treatment, begun on Nov. 12th, was again adjourned on the 19th, it was evidently the conviction of a large proportion of those taking part in it that sanatorium treatment, whatever its limitations, is the best treatment that we yet have for early pulmonary tuberculosis. The immediate results under favourable conditions are obviously very good, as seen in the summary given by Dr. DAVID LAWSON last week of a thousand cases on the point of leaving his care at Banchory. Of these, 53 per cent. had appreciated during sanatorium treatment to the extent of probable arrest of disease, and a further 27 per cent. had definitely improved. Dr. W. O. MEEK, whose paper we publish in full this week, finds equally favourable results in the different class of patient for which Frimley Sanatorium provides. Given a reasonable selection of cases for treatment, he finds the response and the immediate result to be almost uniformly good.

But, except in the case of the well-to-do, the immediate effect of sanatorium treatment gives no trustworthy indication of the ultimate result. Professor SIMS WOODHEAD and Mr. VARRIER-JONES, in a communication to our columns this week, express the fact in exact terms when they state that the well-to-do person has three times more chance of keeping sound after treatment than has the working-man. Recognition of this fact has, indeed, resulted in certain quarters in branding the sanatorium treatment of the working-classes as a complete failure. But figures based on sound clinical observation and analysed on logical methods must replace general impressions. Dr. NOEL BARDSWELL has compared the prospect of life of sanatorium patients, as they leave Midhurst Sanatorium, with the actuarial expectation of life for a healthy person at the same age. He finds that in first-stage leavers the prospect of life was about one-sixth, and in second-stage leavers about one-twentieth of the normal expectation. The calculation is a novel and useful one, but Dr. BARDSWELL pointed out himself that the comparison should in fairness be made with the prospect of life for the tuberculous patient *not* undergoing sanatorium treatment, but the figures for such an analysis, however, are not available. Although Dr. MEEK did not put the Frimley figures into similar form, he gave a most instructive comparison between two series of leavers with apparently equal prospect of maintaining their health. In the one case the patients returned to their former occupation in and about a large city, and of these 30 per cent. were well and at work two years later. Of the second group, who changed their environment in accordance with the advice given to them, 80 per cent. were continuously well and at work after the same period. Sanatorium treatment cannot fairly be judged apart from what precedes and what succeeds it. It has been described as one link in a chain of remedial measures, or, in the language of metaphor, as a stanza in the lullaby which tuberculosis sings from the cradle to the grave. All that can fairly be expected from sanatorium treatment is that it shall teach to those who are experiencing it the hygiene of the healthy life, and shall raise for a brief period the resistance to the disease which has been lost under unfavourable circumstances. Nothing can prevent a return to the environment which produced the disease from leading to a renewed breakdown.

Sanatorium treatment is therefore bound up so closely with after-treatment that the two cannot in any useful sense be considered apart, and where efficient after-care is lacking no result can be expected. Conditions in London are especially disappointing, and the two distinguished laymen who contributed to the adjourned discussion of this subject at the Medical Society last Monday were not impressed by the value obtained in London from expenditure on sanatorium benefit. One described it as so much money thrown away, and both urged upon their hearers the necessity of drastic reform in the environment of the working-classes. An increased hygienic standard for town life is essential to maintain the immunity acquired during sanatorium treatment, and will, as Dr. T. D. LISTER pointed out trenchantly in opening the debate, largely avoid the necessity of sanatorium treatment at all if it is applied in advance. Do away with dirty surroundings and bad habits of life, Sir DOUGLAS POWELL put it, and the infection of tuberculosis would almost cease to be operative.

Georgian Medicine.

GEORGIAN medicine, especially the theory and practice of our science and art during the half century when GEORGE III. was king, formed the interesting subject chosen by Dr. ARNOLD CHAPLIN for the FitzPatrick lectures delivered last week before the Royal College of Physicians of London. In giving the chief reasons which had determined this selection Dr. CHAPLIN stated that the reign of GEORGE III. witnessed the last struggle of Feudalism to control the acts of mankind, and the dawn of those conceptions of civil, intellectual, and religious freedom under which we at present live. This, of course, is substantially true, though a good many vested abuses remained to be dealt with in Victorian days, nor is the victory over them yet complete. Between the general conditions of intellectual advancement and the special progress taking place in medicine at the close of the eighteenth and beginning of the nineteenth

centuries Dr. CHAPLIN instituted a just parallel, describing the movements in which mere speculation gave place to inquiries which, founded on a true basis, became steps towards scientific freedom. But advancement in medical knowledge which gave such promise at the end of the seventeenth century, for some reason, not easily explained, slumbered for the first half of the eighteenth century, and enthusiasm was only rekindled by the work of HALLER, MORGAGNI, and BAILLIE, whom Dr. CHAPLIN regards as the real founders of modern medicine.

The numerical strength of medical men resident in England and Wales was computed by Dr. ARNOLD to be something under 5000 at the end of the eighteenth century, from which figures, which he submitted as quite rough, it would seem that the proportion of medical men to population has not much varied. The control exercised over them by the Royal College of Physicians of London, the Company or Corporation of Surgeons, and the Society of Apothecaries was capricious, stringent in many ways, and inefficient in others. The passing of the Apothecaries Act in 1815 placed a considerable portion of the medical profession under the ægis of an Act of Parliament, and from this time conditions arose which made the standardising of professional knowledge, and the institution of some professional body to undertake such work, a foregone conclusion. Soon it was seen that the facilities existing in England for the acquirement of medical knowledge were good if properly used. In this part of the lecture the scope of education at the Universities and in London was given in detail, and it was shown how extensive was the standard of culture expected of those who intended to become physicians. The curriculum at the London hospitals and private schools in the metropolis was discussed, and an account was given of the rise of dispensaries, 23 of which were founded during the reign of GEORGE III. Space was also devoted to a consideration of the activities of the various medical societies established during the reign, several of which are in existence at the present time. Following on the above, a detailed account was given of the great contest in the College of Physicians between the Fellows and the Licentiates, and from Dr. CHAPLIN'S learned picture there emerges the definite impression that those of us who regard the medical profession of a century ago as either ill-trained or unprogressive hold a quite unsound opinion.

In the second lecture the individual work of physicians who contributed to the advancement of medical knowledge was considered. After giving some account of the sources from which information concerning the activities of individual leaders could be gleaned, Dr. CHAPLIN showed that for the first 30 years of the reign of GEORGE III. physicians were purely clinicians, and relied entirely upon knowledge of disease gained at the bedside. As types of these clinicians, the characters and work of HEBERDEN, Sir GEORGE BAKER, and Sir HENRY HALFORD were described at some length. But towards the end of the eighteenth century the clinicians had reached limits beyond which it was almost impossible to advance, and were compelled to make way for men who, in addition to being possessed of clinical knowledge, had brought to their aid the chemistry and physiology of the day, which were already shaping into scientific pathology. These sciences, owing respectively to work by HALLER, MORGAGNI, and later BAILLIE, to whose names that of LAVOISIER should be added, had already been placed upon a sound basis, and were in a position to lend their aid to practical medicine. The first to make use of the newer methods was MATTHEW BAILLIE, the father of medical pathology, but he was soon followed by WILLIAM PROUT, who applied the lessons of chemistry to the elucidation of medical problems. After the work of these men medicine was able to make rapid strides, and the logical sequence of their efforts found expression in the brilliant discoveries of the modern clinicians, of whom BRIGHT, ADDISON, WATSON, and JENNER were the prominent examples selected by Dr. CHAPLIN for mention, as well as ROBERT WILLAN, who founded the modern school of dermatology. The position of obstetrics during the reign of GEORGE III. was very interesting. Most of the activity in this branch of medicine was due to the teaching of SMELLIE, although the influence of THOMAS DENMAN, WILLIAM OSBORNE, WILLIAM HUNTER, and DAVID ORME played a considerable part. Strong feeling was excited among the public by the introduction of "men midwives" into this department of medicine, and it lasted in England down to the time of WILLIAM IV., in spite of the fact that on the continent the work of obstetrics had been in men's hands many years.

In Dr. CHAPLIN'S summary of the work of those physicians who contributed most to the advance of medical science during one of the longest reigns in our history, he has employed as outstanding examples the characters and work of THOMAS YOUNG, WILLIAM HYDE WOLLASTON, and WILLIAM CHARLES WELLS. In the lectures to be delivered next year quite other medical protagonists should obtain mention, for the subjects to be considered will be the rise and development of the Army and Naval Medical Services and the care of the insane. We are glad that such particular attention was paid to the work of WELLS, both as a physician and a man of science, for his valuable contributions to medicine and natural philosophy have been somewhat neglected. The claim for WELLS as one of the foremost intellects of the reign has much to support it. In the domain of medicine his papers on the presence of albumin in the urine and his able differentiation of the several forms of dropsy certainly paved the way for the great work of RICHARD BRIGHT. We owe to his researches, also, the first exact explanation of the phenomenon of dew.

Dr. Marcus S. Paterson, medical director of King Edward VII. Welsh National Memorial, has resigned his appointment on account of illness. We are glad to learn that he is now recovering his health.

Dr. Edward Burd, who died last week at his residence, Newport House, Shrewsbury, at the advanced age of 91, was a well-known consultant in the West of England, and the first man to take the degree of Master of Surgery at Cambridge.

Annotations.

"Ne quid nimis."

PRISON DIET.

REPLYING to a question in the House of Commons on Oct. 25th, the Home Secretary alluded to the revision of the prison dietary which had been carried out with a view to economy in the use of foodstuffs. He added that the effect of the new diet was being carefully watched by the medical officers of the prisons, who freely used their power to supplement the diet in case of necessity. We understand that the calorie value of the diet works out in round figures as follows: In local prisons, for males, 2900; for females, 2500. In convict prisons, for males on ordinary labour, 3200; on very hard labour, 3500; for females, 2650. The record of body-weight which is being kept will afford a ready criterion as to whether the diet results in a satisfactory equilibrium under the conditions of prison life. It may be recalled that the generally accepted standard of diet for an average man doing an average day's work is 3400 calories, but in making a comparison between this standard and the figures given above for prison diet two points should be borne in mind. In the first place it is doubtful whether there are actually 3400 calories available at the present time for every member of the community. And secondly, the prison figures are to be taken as the caloric value of the food *as eaten*, whereas in the other case the value is for food *as purchased*. Langworthy has given a round figure of 15 per cent. for the depreciation in caloric value between the purchased food and the quantity which passes the lips, although in these days of economical cooking and well-tidied plates the discrepancy is probably less. In neither the one nor the other is allowance made for the indigestible portion of the food which passes the alimentary canal unchanged, and is variously reckoned as from 5 to 11 per cent.

A SWISS CANCER INVESTIGATION.

THE council of the Swiss Association for Combating Malignant Disease has addressed a circular to the Swiss doctors calling attention to the conspicuously high incidence of cancer in Switzerland and to the fact that nothing is yet known either as to the cause of the disease or the explanation of its special prevalence in that country. The council therefore asks for precise statistical and clinical information in regard to all fatal cases of cancer of the breast. Special notes are requested, first, of the influence of lactation, mastitis, or previous innocent tumours (fibro-adenoma, cysts) on the development of cancerous growth, and, secondly, of the effect on prognosis of operation, Roentgen rays, or radium applications. This inquiry will be based on the death certificates sent in to the Statistical Department. Similar information is also requested in regard to patients still living at the end of 1915 who had been under treatment for mammary cancer during the preceding five years. A modest honorarium of 2 francs is offered for each schedule thus filled in, and the association hopes to obtain statistical material which may lead to the formation of some useful opinion. Switzerland has, as is well known, the highest cancer death-rate in the world, although alone among civilised countries the rate is a diminishing one. Inspection of all dead bodies by a medical man is compulsory in Switzerland, and this may to some extent account for the highness of the death-rate in cancer. Any proposal to amplify the statistical information on cancer in that country is valuable and welcome, and the selection of mammary cancer for intensive study is a wise one. The frequency of operation, with its accompanying accuracy in pathological diagnosis, secures a firm objective basis for the data, and the points selected for the questionnaire are precise and well selected. The demarcation of urban, industrial, and pastoral communities in the population is definite and should enhance the value of the results obtained.

THE TREATMENT OF WAR NEUROSES.

WE publish in another column a letter from Dr. Thomas Lumsden, bringing to the attention of the medical profession a scheme for the treatment of shell-shock patients which he has already placed, in something the same form, before the general public in the columns of the *Times*. Under this scheme, known as the "Country Host Institution," neurasthenic patients of suitable character would be billeted on country hosts upon the usual terms of 3*s*. per diem, pay and separation allowances being drawn. The patients, whom Dr. Lumsden suggests should be mild sufferers from shell shock, would be carefully selected and regularly inspected, so that in event of breakdown or illness they could be transferred to hospital. The idea of thus getting separate attention for a certain class of sufferers from shell shock in suitably peaceful environment has already received, Dr. Lumsden points out, an optimistic reception from the President of the Special Medical Board on Neurasthenia, and has been promised a trial by the highest military authorities, and he begs that medical men who are in sympathy will put themselves into communication with him. There can be no doubt of the medical endorsement of the scheme whatever. Granted that it can be made to run, it would prove veritable salvation to some of these patients; and we may assume that its unqualified rejection, if Dr. Lumsden is correct in believing that such rejection has occurred, has been owing to practical difficulties of organisation, or doubt as to whether the large amount of help needed would be forthcoming.

LUPUS PERNIO.

Lupus pernio is one of the rarer diseases of the skin, so-called, and was first described by Besnier in 1889. He believed it to be a vascular form of the commoner lupus erythematosus, judging from clinical grounds. Subsequent investigators set it down among the group of cutaneous tuberculides; the tubercle bacillus itself has, apparently, never been found in the lesions of lupus pernio. Dr. Jörgen Schaumann has recently published[1] an elaborate study of the histology and bacteriology of the disease, and he gives good reasons for supposing that it is not associated with tuberculosis at all. Contrariwise he connects it with another rare skin disease, the cutaneous sarcoid of Boeck (1899), which may be identical with "Mortimer's malady" described in 1898 by Hutchinson; both lupus pernio and Boeck's sarcoid of the skin are now said by Dr. Schaumann to be evidences of one

[1] Nordiskt. Med. Arkiv, Stockholm, 1917, Afd. II., xlix., Häft 6.

and the same disease, a "tuberculoid lymphadenia," characterised by the appearance of specific lesions in the lymphatic glands, tonsils, bone marrow, lungs, spleen, and liver. He goes on to say that this tuberculoid lymphadenia has no connexion with tuberculosis or with any other known infection, which makes one wonder why he attaches to it the misleading name "tuberculoid." He further proposes to call it "lymphogranuloma benignum," a benign infectious granuloma. The chief novelty of Dr. Schaumann's work appears to lie in the fact that he has made elaborate histological and bacteriological and skiagraphic researches on his three patients with lupus pernio and his single case of Boeck's sarcoid, with the result that he has found out what previous investigators have missed—namely, that the lesions in these diseases are far more widespread than was hitherto suspected. The cutaneous lesions are in reality of secondary importance in the disease, appearing, perhaps, only late in its course, and yielding to treatment, while the characteristic deposits in the lymphatic glands or lungs or liver persist unaltered. These deposits are similar, in the case of the lymphatic glands at any rate, to those in the cutaneous lesions, and consist of follicles filled with epithelioid cells and giant cells, surrounded by lymphoid and plasma cells. The fingers in lupus pernio often present the outward appearance of tuberculous dactylitis, as is well known; but in the former disease the X rays show patches of bony rarefaction at the ends of the phalanges, whereas in tuberculous ostitis the lesions tend to occur rather in the middle of the phalanges and to cause a swelling of the bone absent in lupus pernio. And these bony changes may occur in lupus pernio before the cutaneous lesions. In none of Dr. Schaumann's patients did tuberculin injections (up to 15 milligrammes) give rise to any focal or general reaction; and he failed to produce tuberculosis in experimental animals by inoculation with fresh granulomatous tissue taken from his patients. Bacteriological cultivations made from the glands and cutaneous lesions yielded him diphtheroid bacilli, streptothrices, and staphylococci; he attaches no etiological importance to any of these organisms, pointing out that similar growths have been obtained from the cutaneous lesions in leprosy and other affections.

THE PREVENTION OF NUISANCES ARISING FROM FLIES AND PUTREFACTION.

THE results of a series of investigations on the prevention of nuisances arising from flies and putrefaction are recorded in a valuable paper contributed to the October number of the *Journal of Hygiene* by Mr. F. W. Foreman, F.I.C., and Dr. G. S. Graham-Smith. The findings in all directions are in favour of the use of coal-tar creosote oil of "country make." Thus, for killing eggs or larvæ in their breeding grounds the authors find coal-tar oils, and especially creosote oil, to be most satisfactory reagents. Flies sprayed with these oils are killed, and they are repelled from substances which attract them, such as decaying bodies and fæcal material, and they are kept out of habitations by means of the repellent constituents of coal-tar oils. In regard to the treatment of decomposing carcasses, coal-tar creosote oil gives the most satisfactory results in practice and exhibits most of the properties required of such a reagent for the purpose. It is pointed out that in the superficial treatment of intact or opened carcasses, and other putrescible materials, reagents should be used which adhere to the greasy surfaces. Films are so formed rendering the skin waterproof and killing the bacteria in it, thus checking putrefaction by preventing the access of water and putrefactive bacteria to the tissues. The reagent should also be capable of eliminating any stenches which may arise, repelling flies, killing the eggs or larvæ, resisting the action of water, and remaining operative in all respects for a long period. Watery emulsions of disinfectants appear to be deficient in most of these properties, and only undiluted oily reagents possess them. In their chief conclusions the authors state that experiments with the bodies of horses show that they behave in the same manner as those of smaller animals, and can be efficiently treated in the same way. A body was preserved by surface treatment alone for a long period, and produced no appreciable nuisance from smell. For large carcasses relatively less fluid is required for surface treatment owing to the smaller ratio of surface to weight. The treatment of human bodies under war conditions has given satisfactory results. Flies have been kept from entering such places as dug-outs by hanging sacks treated with creosote oil mixtures over the entrance. Adult flies in dug-outs and other situations and on putrescent material are killed by spraying. Latrines have been kept free from flies by spraying. The paper contains full instructions for using the creosote oil mixtures, and the research has evidently led to some important practical issues.

THE PRESCRIBING OF COCAINE.

MORE than a year ago[1] we called attention to the Defence of the Realm Regulations with respect to the sale of cocaine, and although these Regulations have now been in force for more than 15 months, there is evidence that practitioners are not all cognisant of the bearing of them. At a recent prosecution of a pharmaceutical chemist convicted of dispensing cocaine contrary to the Regulations, and fined £25 on each of two counts, it was stated that in the one case the prescribing doctor failed to comply in every material respect with the Regulations, and in the other in two important respects. The defending solicitor contended that the doctor, although not summoned, was the person mainly responsible in both cases, and that the chemist had committed only technical irregularities. It may therefore be well to recapitulate here the Regulations, which are both stringent and precise.

A medical man who writes a prescription of which cocaine is one of the items must:—

(1) sign it with his full name, his address, and his qualifications,

(2) write the date upon it,

(3) mark it with the words "Not to be repeated,"

(4) specify the total amount of cocaine to be supplied;

and further, in the case of a practitioner who dispenses his own medicines, he must

(5) enter the ingredients of the prescription with the name and address of the person to whom it is supplied in a special book open to inspection.

The only exceptions to these instructions are: (1) where the medicine to be supplied is a proprietary one, it is sufficient to state the amount of the medicine and not the total amount of cocaine it contains, and (2) in the case of prescriptions written on Health Insurance forms, the practitioner's address and qualifications, and the words "Not to be repeated" need not be marked on the prescription. It should also be added that prescriptions containing less than one part of cocaine per thousand do not come within the scope of the Regulations.

However troublesome the carrying out of this routine may be to the practitioner, he has no

[1] THE LANCET, August 5th, 1916.

alternative but to comply. Even if the chemist takes the responsibility of dispensing a prescription not in accordance with the Regulations, the practitioner is not legally protected, inasmuch as under the Code, as consolidated and revised to Sept. 30th, any medical practitioner giving a prescription otherwise than in accordance with the provisions shall be guilty of a summary offence against the Regulations and is therewith liable to any penalty up to penal servitude for life. Should the Regulations be found to press hardly upon patient and doctor in material respects it will obviously be more expedient to make representations in the proper quarters, rather than to take the serious individual risk of infringing the Regulations.

ENLARGEMENT OF THE SUPRARENAL GLANDS IN A CASE OF DIABETES.

THE current view of the pathology of diabetes is that the disease is due to failure of the internal secretion of the pancreas, which is in some way necessary for the normal metabolism of carbohydrates. But the internal secretions of other glands —adrenals, thyroid, and posterior lobe of the pituitary—are known also to play a part in carbohydrate metabolism, and administration of their extracts produces glycosuria. This is generally regarded as due to an antagonistic effect on the internal secretion of the pancreas. However, in diabetes little is known of changes in glands other than the pancreas. In the *Medical Journal of Australia* Mr. W. F. Litchfield and Mr. E. M. Little have reported the following case:—

A widow, aged 53 years, was admitted into the Royal Prince Alfred Hospital, Sydney, under the care of Mr. Morton, on Feb. 22nd, 1917, for gangrene of the big, second, and third toes of the left foot. She had suffered from thirst and a large appetite for eight months. The urine contained sugar and albumin, and had a specific gravity of 1030. She was fat and had a profuse growth of hair on the chin. On the 27th the affected toes were amputated, and on March 20th the foot was amputated on account of recurrence of gangrene. The stump did not heal well and ultimately became gangrenous. A large bedsore formed over the sacrum. She became thinner and weaker, and died comatose on April 11th. The necropsy showed hypertrophy of the left ventricle and atheroma of the aorta and of the coronary arteries. The pancreas was atrophied and hard. The kidneys appeared normal, except that the vessels were rigid. The suprarenals were much enlarged, particularly the left, one end of which was large and globular, suggesting a new growth. The pituitary appeared normal. Under the microscope the kidney showed fibrosis and thickened vessels and the pancreas a fine fibrosis of the whole gland. The islands of Langerhans were present in normal numbers. The suprarenals showed an increase of glandular substance, which appeared to be chiefly in the cortical portion. Nothing abnormal was detected in the pituitary gland.

The outstanding features of the case were the association with diabetes of hypertrophy of the suprarenals and pronounced arterio-sclerosis. Were these correlated in any way? It is established that adrenalin in excess in the blood mobilises the sugar stored in the liver, and also that it constricts the small arteries. Professor Halliburton thinks that "the action of the pancreatic hormone is best explained on the hypothesis that it acts as a natural antagonist of adrenalin," and that when the pancreas is diseased or removed "the action of adrenalin is unrestrained, and thus a diabetic condition is produced." Mr. Litchfield and Mr. Little suggest that in their cases some agency brought about hypertrophy of the suprarenals and that the consequent increased secretion of adrenalin caused arterio-sclerosis, from prolonged constriction of the small arteries, and induced diabetes and ultimately fibrosis of the pancreas from overwork of the organ in its vain attempt to counteract the excessive secretion of adrenalin. But the cause of the adrenal hypertrophy remains unexplained. According to this view pancreatic diabetes would be primarily an adrenal disease. In his work on the "Internal Secretions" Biedl states that many writers have observed hypertrophy of the suprarenals, sometimes of the cortical substance and sometimes of the chromaffin substance, in cases of arterio-sclerosis, and that some have attempted to show a connexion between chronic renal disease and overaction of the adrenal system. The case now reported is an important contribution to the new and fascinating field of the pathology of the internal secretions.

THE BRITISH MARRIAGE-RATE AND THE WAR.

THE Presidential address of Sir Bernard Mallet, the Registrar-General of Births, Deaths, and Marriages, delivered on Tuesday last at the Royal Statistical Society, dealt in a valuable manner, because of his clearness, with those large questions of racial advance or decline which may dictate the fate of the world at the close of a devastating war. On the subject of the marriage-rate of this country he was particularly interesting. For England, Scotland, and Wales he indicated that a fortunate rise in marriage-rates has taken place, though this rise appears to have been in continuation of one which had already become apparent before the war broke out. The marriage-rates were not, as a matter of fact, increased at first by the outbreak of war, but at the beginning of 1916 occurred a sudden rise, due to marriages contracted by young soldiers in an army which was rapidly nearing its present immense size. The rise was not continued throughout the year, but has had its effect. Sir Bernard Mallet's summary of the actual figures shows that 200,000 people in England and Wales have been married between August, 1914, and June, 1917, who in the ordinary course of events would not have been married; the corresponding figure for Scotland he puts at 8000, while in Ireland the number of marriages has remained fairly constant, not appearing to be materially greater than the normal in the period from August, 1914, to June, 1917. These British figures Sir Bernard Mallet finds to be in complete contrast with those prevailing in Germany, and for the contrast he gives two reasons. The first is that an enormous German Army, being thoroughly prepared, rushed on to foreign soil at the outbreak of war, while the bulk of the British Army remained for some time under training at home, so that the men enjoyed opportunities for marriage that were largely denied to the German Army. The rise in our marriage-rates being practically dependent upon the size of the Army, the second reason for its occurrence has been the payment of substantial separation allowances and pensions. The effect which has already been produced by the war marriages, or rather by the abnormal number of marriages which took place in the year ending March, 1916, has had a real influence, at any rate for the time, in arresting the decline of births, which has been a feature in the statistical records of all civilised countries for some years. It is of good omen to learn that this decline has not affected the United Kingdom to anything like the extent to which it has affected Germany and Hungary.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Queen's University of Belfast.

AT a meeting of Senate, and at a meeting of Convocation, of the Queen's University of Belfast held separately on Nov. 16th, resolutions were unanimously passed with the object of putting forward a claim to Parliamentary representation under the scheme for redistribution of seats in Ireland. Committees were appointed to make representations to the Government.

Child Welfare in Portadown.

The fine residence, erected some years ago in Portadown by Miss Carleton, has most generously been handed over by that lady to the town of Portadown to be used as a centre in association with the maternity and child-welfare scheme adopted by the urban council and the local nursing society.

Ulster Medical Society.

At the opening meeting of the winter session the incoming President, Dr. W. Donnan, of Holywood, co. Down, delivered an address on Chemical Physiology. A discussion arose on the attitude of the public health authorities to the schemes for venereal treatment, and the following resolution was unanimously passed:—

That in the opinion of the Fellows and Members of the Ulster Medical Society it is inadvisable that any public health scheme for the treatment of venereal diseases shall be adopted until it is first placed before the medical profession of the affected area for consideration and discussion—the practice which has been followed by Local Government Boards in England and Scotland.

It was noted that in regard to the child-welfare scheme put forward by the health committee of the Belfast Corporation, and subsequently approved by the Local Government Board, the local medical profession had never been consulted.

Tuberculosis in Belfast.

A report has just been issued by the chief tuberculosis officer of Belfast for the three years ended March 31st, 1917, on the scheme of the Belfast Corporation for the Treatment of Tuberculosis. In the last annual report of the Irish Local Government Board this is described as "the most comprehensive scheme in Ireland and one of the most complete in the United Kingdom, providing, as it does, for institutional, dispensary, and domiciliary treatment, not only for all insured and exempt persons, but also for all residents in the city suffering from tuberculosis." The cost of the scheme for the third year under review amounted to just over £30,000. Commenting on this expenditure, the tuberculosis officer writes: "Judged by the standard of death-rate, one might feel inclined to say that it had failed," for, in 1916, the death-rate from pulmonary tuberculosis apparently remained stationary in Belfast—namely, 2·0 per 1000. But claim is made to valuable results in individual cases, in more accurate diagnosis, in prolongation of life, and in rest and education. It is to be hoped that further statistical reports will show a distinct fall in the mortality of pulmonary tuberculosis, for only so can the large outlay on such a scheme be justified to the lay mind.

The Late Dr. William Graham.

Dr. W. Graham, superintendent of the Belfast Lunatic Asylum, whose sudden death, on Nov. 6th, was due to cardiac embolism, secondary to a fracture of the neck of the femur, was a native of co. Antrim, and educated at Queen's College, Belfast, graduating M.D. R.U.I. in 1882. He succeeded the late Dr. Merrick in 1895 as superintendent of the Belfast Asylum, retaining this position until his death, when he was the senior asylum superintendent in Ireland. An acute clinical observer, Dr. Graham was also a remarkable organiser, who got the best work out of all those associated with him. The new asylum at Purdysburn, Belfast, with its villa colony system and its non-restraint method of treatment, was largely a product of his initiative. For some time he had held the rank of lieutenant-colonel in view of his appointment as head of the hospital in Belfast for soldiers affected with mental disease.

The Ballinrobe Guardians and their Medical Officers.

The state of affairs at Ballinrobe continues to be one of considerable importance to members of the Irish Poor-law service. The guardians and their medical officers are still at loggerheads. Sir J. Acheson MacCullagh, M.D., senior medical inspector, Local Government Board, attended a special meeting of the guardians on Monday and urged a friendly settlement on the point of salaries. The doctors, at the request of the County Association and the Local Government Board, withdrew their resignations, while the guardians, in a manner regarded here as typical, refused to make any advance and declared that they had scored the first victory in the fight. The Irish Medical Association has taken up the matter, and the chances seem to be that a limit has at last been reached where medical men will no longer, as heretofore, submit to constant under-payment on the strength of the worn-out appeal to their humanity.

The Dental Hospital of Ireland during the Past Year.

The thirty-seventh annual general meeting of the members and subscribers of the Incorporated Dental Hospital of Ireland was held last week. The annual report stated that the total number of attendances was 17,238. In the conservation department there were 4871 operations, and of these 3536 were free. In the dispensary there were 4585 attendances, all free. 1575 of the 2388 extractions in this department had the benefit of local anæsthetics. 1802 general anæsthetics were administered, 721 of which were free. The prosthetic department supplied 18 dentures and did 20 repairs free for necessitous patients who were unable to make any contribution. The work record for the year was more satisfactory than the balance-sheet. On Sept. 30th, 1916, the balance due to the Ulster Bank stood at £1299 18*s.* 6*d.*, and the hospital enters the present year with that adverse balance increased by £425 2*s.* Subscriptions and donations, which were £384 10*s.* 2*d.* last year, amounted this year to £366 1*s.* 6*d*, and patients' contributions, which amounted last year to £822 18*s.*, were for this year £798 19*s.* 5*d.* The board has appealed for more generous support on the grounds that the greater part of the work done, amounting to 15,785 cases, was free work.

Dispensary Doctors of Military Age.

In the King's Bench Division, before the Lord Chief Justice, Mr. Justice Gibson, and Mr. Justice Kenny, the case of the King *v.* the Local Government Board came on for argument. The question for decision by the court was whether the Local Government Board were justified in refusing their sanction to the appointment by the guardians of the Lismore union of Mr. Thomas M. Cronin as medical officer of the Tallow, co. Waterford, dispensary district, because he was of military age and eligible for service in the Royal Army Medical Corps. The case had been argued some months ago, judgment was reserved, and it was now re-argued. Mr. M. J. Kenny, medical officer to the Tallow Dispensary, died early in the year. Three candidates, all of military age, answered the advertisements for his successor. Mr. Cronin was declared elected for the duration of the war. The Local Government Board refused to sanction the appointment on the grounds that Mr. Cronin was 26 years of age and eligible for the Royal Army Medical Corps and that the guardians were in a position to make other suitable arrangements to provide for the sick poor of the Tallow district. The guardians stated that they could make no suitable arrangements for the Tallow Dispensary, and guaranteed that if Mr. Cronin at any time offered his services to the Royal Army Medical Corps they would not hold him to his appointment. It was also contended on behalf of the guardians that the Local Government Board had no right to go outside the Poor-law to enforce conscription on medical men of military age. After further argument judgment was finally reserved.

Nov. 20th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Industrial Accidents Following War Wounds.

THE existing laws relating to industrial accidents have recently been modified in view of the fact that many of the workers are men who have been wounded and discharged from the Army. The new measure enacts that any ex-service man suffering from severe or incurable infirmity as a result of wounds or disease acquired on active service, who meets with an industrial accident after return to civil life, shall be

specially examined to ascertain if his accident is due in whole or part to his existing infirmity. In the former case his employer is exonerated from any liability for the pension granted to the victim or his heirs, and in the latter case from a proportion of his normal contribution. The pensions will be paid from the interest on a special disablement fund deposited with the national old age pensions fund under guarantee by the Ministry of Labour and financially administered by the Caisse des Depôts et Consignations. The modification should render it less difficult for discharged sailors and soldiers to find work in the factories than when the employer feared responsibility for accidents which he had good reason to assume would be more frequent in these ex-service men.

A New Artificial Leg.

Professor Amar, who is in charge of a laboratory at the School of Arts and Crafts devoted exclusively to the physiological study of working conditions, is well known for his work in analysing the movements of injured limbs by graphic methods. He recently presented to the Academy of Sciences a new form of artificial leg combining the pilon with the standard variety. The new leg weighs less than 2 kgs., is provided with joints at the knee and ankle, and is attached to the stump in a way which avoids the rubbing which often results from wearing a pilon. It is made of durable material capable of resisting the effects of perspiration and of inclement weather. By its use a normal gait is possible on the level, and even on an incline fatigue is reduced to a minimum. The addition of a gaiter makes the limb indistinguishable from one of flesh and bone. M. Amar supported his thesis by a demonstration of men walking freely with the new apparatus.

Condensed Milk in Acute Enteritis among Soldiers.

Dr. Lassablière has recently published a study of the results obtained from the use of condensed milk in the treatment of acute enteritis, a common condition among soldiers and apparently due to alimentary toxins combined with the direct affect of cold on the abdomen. The duration of symptoms is much reduced by feeding the patient exclusively on condensed milk diluted with four times its volume of rice water to the extent of 1-2 litres a day. The number of motions diminishes rapidly to the normal, while the discharge of mucus and blood ceases. With the usual diet of vegetable soup and milk, plus medicaments, the author finds the average duration of the disease to be 26 days, but with condensed milk, sweetened and not skimmed, the period is reduced to less than 15 days.

Cutaneous Origin of Streptococci in War Wounds.

It is becoming more and more certain that the streptococcus is the most dangerous agent of infection in gunshot wounds, whether acting alone or conveying an added virulence to the micro-organisms associated with it. Dr. Tissier has been able to show that any wound from which streptococci have been proved to be absent may, after simple irrigation, be safely reunited by first intention, whereas if streptococci are present drainage is indicated. MM. Levaditi and Delrez have gone a step further, and shown in a note read before the Academy of Sciences that the streptococcus, in common with other organisms infecting war wounds, has its origin in the skin of the wounded man, where it is present in health. These authors find a certain cutaneous flora common to groups of individuals, the transmission from one to another being favoured by the communal life in hutments. A group may be met with harbouring cultures of *B. perfringens*, another with Friedländer's bacillus, another with streptococci, and so on. They explain thus the fact that in the military units of a certain sector the wounds are richer in one particular organism than those of other units. The theory of carriers which has explained many peculiarities in the etiology of epidemic diseases may hold good also to explain the varieties of infection in war wounds. A typical example is furnished by the ambulance of La Panne, where the number of wounds infected with streptococcus rose from 19 per cent., which represented the proportion among the Belgian wounded in that sector, to 56 per cent., after the admission of British wounded. Streptococci were found in abundance on the skin of the latter. The authors believe, in fact, that the streptococcus is particularly prevalent among the British, accounting in this way for the assumed greater severity of scarlet fever in England.

Acute Poisoning by Arseniuretted Hydrogen on a Submarine.

Dr. Giardano has reported, in the crew of a submarine during submersion, acute symptoms of intoxication the cause of which could not be attributed to raised temperature or pressure, or to the lack of hygiene. After several hours' submersion the crew presented the following symptoms: nausea, vomiting, indefinable discomfort in the throat, metallic taste, intestinal colic with or without diarrhœa, headache, vertigo, and muscular weakness. Next day the symptoms were less marked, but there remained an icteric tint and tenderness on pressure over the liver, while the urine contained bile pigment and urobilin, the blood showing the anæmia of hæmolytic jaundice. Increased destruction of red cells was evidently present, due to a toxic cause. On close inquiry it was discovered that the cause of the occurrence was arseniuretted hydrogen arising from the accumulators during the submarine voyage. Arsenic was shown to be present in the asbestos separating the lead plates, and an analysis of the air in the submarine revealed traces of the highly toxic AsH_3. These facts should be borne in mind in the manufacture of accumulators intended for submarines.

Nov. 15th.

MEDICINE AND THE LAW.

Bowden v. *Bowden.*

IN the petition for divorce of Captain E. C. Bowden, R.A.M.C., recently heard by Mr. Justice Horridge, the issue depended upon a question of perennial medical interest—namely, the duration of pregnancy. The material facts, stated briefly, were as follows: On the night of Dec. 19th, 1915, sexual intercourse took place between the petitioner and respondent, but, according to the petitioner, under conditions which precluded the possibility of conception. On Dec. 20th the petitioner left for France, only returning some months later. The respondent, who had menstruated immediately before the intercourse, menstruated again in January, 1916, according to her own statement, while paying a visit to friends, and on Jan. 19th went to her father's house. The suggestion on the part of the petitioner was that at some time immediately before going to her father's house she committed adultery. On March 10th, 1916, she was operated upon for appendicitis and was then found to be pregnant, and when she informed her husband he asserted positively that she must be mistaken. On his return to England in June he was told that the child was expected in September. On Sept. 28th the respondent had a fall, for which she was treated in a nursing home at Worthing, where she remained until she was delivered normally on Oct. 22nd, 307 days after the date when her husband left England. For the petitioner, Dr. H. R. Spencer and Dr. W. S. A. Griffith gave evidence as to the normal period of gestation, as to cases under their observation in which this period was exceeded, or was stated to have been exceeded, according to the patient's calculations, and as to the probability of normal delivery of a child born at 10 months. Dr. F. Hinds gave evidence for the respondent with regard to the operation for appendicitis, and Mr. E. Davis testified as to his attendance upon her after her fall on Sept. 28th; he was of the opinion that labour had then begun but had been arrested. Dr. John Phillips, speaking as to prolonged gestation, cited instances of 298 days, 306 days, and 308 days respectively which had occurred in his experience. Mr. Justice Horridge declined to say that on the medical evidence given there was no case to answer, and the respondent went into the witness-box and denied absolutely that she had committed adultery. His Lordship, in giving judgment, dismissed the petition, stating that there were points in the respondent's conduct which were extraordinary after she learnt that she was pregnant, but that he accepted her testimony with regard to the marital relations of herself and her husband, and believed her story. He pointed out that the medical evidence admitted the possibility of a child being born at 307 days. The issue in this case was only of fact. The legal presumption is that a child born in wedlock is legitimate unless impossibility through non-access of the husband to the wife is proved, there being no evidence, other than the date at which the child was born, pointing to adultery on the part

of the wife. Mr. Justice Horridge's observation, which he is reported to have made before counsel addressed him on behalf of the petitioner, was quite beside any points raised in the case. According to the *Times*, he said that he "believed the respondent, and that, as he believed her, he cared more for her evidence than for that of all the doctors in the world." That is not the language which a judge should use concerning expert evidence given before him, while the respondent may rightly feel aggrieved that she should seem to have won her case through the disregard by the judge of medical evidence.

A Discharged Soldier as a Tramcar Driver.

After holding an inquiry into a tramway accident at Dover, Colonel Pringle, inspector under the Board of Trade, has stated in his report that the accident was due to the driver having failed to make proper use of the means at his disposal for stopping the car, and to his having "completely lost his head at the critical moment." He adds that the man in question had been discharged from the Army for nervous breakdown after 18 months' service in Egypt, and calls attention to the necessity for nerve and experience in drivers of tramway cars. He further points out that men discharged as unfit for military service through nervous breakdown are unlikely to prove suitable two months later as drivers on difficult routes, and that it would be wiser to close such routes than to place upon them drivers lacking the necessary experience. All medical men will agree with Colonel Pringle's view.

The Liability of a Farmer Selling Milk.

In a recent case decided by the Divisional Court, the court allowed the appeal of an inspector under the Food and Drugs Act for the borough of Hastings who had failed to secure a conviction before the magistrates at petty sessions. The appellant had taken samples from a churn containing milk sent by rail to Hastings by the defendant, a farmer, and had found it deficient under the Sale of Milk Regulations, 1901. It was found as a fact that the milk was put into the churn as it came from the cow, but the churn was not locked and there was no evidence to prove that it had been tampered with in transit. It was contended by the appellant that the presumption under the regulations that the milk was not genuine had not been rebutted by the respondent, as there was nothing to show what happened to the milk-churn on the journey, and that the respondent's liability did not cease until the arrival of the milk at the place of delivery. The justices considered that as the milk was genuine as it came from the cow when delivered to the railway company, the respondent was free from liability, and they declined to convict. In arguing on behalf of the appellant counsel called attention to the terms of the contract between the farmer and the milk-dealer whereby the property in the milk was not to pass until the churn reached Hastings Station. Mr. Justice Darling, in delivering judgment allowing the appeal, said that the case was absolutely concluded by the judgment in a case already decided—Parker *v.* Adler, 15 Law Times Reports 3; 1889, 1 Q.B. 20. The respondent was clearly liable to conviction, and if the authorities had been consulted the case would not have been stated.

DONATIONS AND BEQUESTS.—By the will of the late Mr. J. Isaac Jacobs the testator has bequeathed £5000 for hospitals and Jewish institutions, including the Swansea Hospital, and such hospitals as the executors may select at Cork and Passage West, and the Home and Hospital for Jewish Incurables, and to pay not less than 100 guineas to the Swansea Hospital.

CHRISTIAN FELLOWSHIP CLUB AS A MEMORIAL TO FALLEN STUDENTS.—On Nov. 26th the Student Movement House, 32, Russell-square, W.C., will be opened as a memorial to students who have fallen in the war, when the Archbishop of Canterbury, the Rev. Ivor J. Roberton, of Regent-square Presbyterian Church, and Miss W. A. Richardson, vice-principal of Westfield College, will take part in the ceremony. The house has been fitted up as a club where students of London, the largest college centre in the world, may meet for social and recreative amenities and where Christian fellowship may be generally promoted. It is pointed out by the secretary, Mr. Tissington Tatlow, that no religious test of any kind will be applied to members of the club nor will work of a proselytising character be permitted.

Correspondence.

"Audi alteram partem."

SUCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. W. M. Crofton, of Dublin, has recently raised in your pages [1] a plea for prophylactic injection in the war against tuberculosis, basing his argument on the success recently attained in the Army by such means against the enteric fevers. This argument ignores the well-known principle that each disease must be dealt with according to its special nature and peculiar mode of propagation. A few instances may be quoted to illustrate this principle. Malaria is dealt with successfully by draining the breeding places of the mosquito, bubonic plague by destroying the rat, but neither of these methods would succeed against pneumonic plague, which must be prevented from spreading by isolating the patients and protecting by masks those who have to come into close contact with them. Hydrophobia has been suppressed by muzzling the dogs; and, lastly, typhoid itself, in the civil population, has been reduced to the status of an uncommon disease by sanitary engineering. Indeed, the success of sanitary engineering in this field was so great that it led at one time to the belief that it was the one and sovereign method for protecting the health of the people, and for a time there was little progress. But when the principle to which I have referred became recognised one success followed after another. Protective inoculation for tuberculosis therefore must claim no borrowed support but must stand on its own merits—if it has any. Let us, for a moment, consider what these are.

The inoculation of small laboratory animals with tuberculin and a host of other products of the tubercle bacillus has been going on for the last 30 years without much success, but, on the other hand, some quite demonstrable increase of resistance has been obtained in calves by the injection of living tubercle bacilli, human or bovine. Inoculated animals may even be able to resist the injection of large doses of bovine bacilli (50 mg.) which prove, almost without exception, fatal to control calves in a few weeks.[2] But the acquisition of this degree of resistance is uncertain, and, according to all authorities, not of long duration, lasting at most only a year, or perhaps two. Moreover, it has been shown that the bacilli may remain alive for considerable periods, may produce lesions in eyes or joints after a year or more,[3] and may even remain, in the case of heifer calves, latent in the mammary gland, and infect the milk when the calf has become a cow.[4] The injection of dead bacilli has not been followed by any marked increase of resistance. For these reasons protective inoculation of cattle has been discontinued.

This being so, it is pertinent to ask whether we are likely to produce by such means better results in man. Man is probably about as good a subject to immunise against tuberculosis as the ox. Both species are endowed by nature with a good deal of resisting power. Man, we now know, frequently becomes infected without developing progressive disease. The ox develops chronic tuberculosis which often makes so little difference to the animal's appearance that it seems to be perfectly healthy [5]; moreover, we know that we can inject it with small doses of living bovine bacilli without any serious result.[6] Man, therefore, is probably a good subject to immunise, but tuberculosis, it seems, is not a disease which confers much immunity. Moreover, man is at a great disadvantage as compared with the ox, inasmuch as there is no type of tubercle bacillus incapable of causing death or progressive disease in him as the human type of tubercle bacillus is incapable of causing such results in the calf. For this reason it could never be permissible to use in the case of man living cultures, as has been done, with the amount of success indicated, in the case of the ox. The injection of dead bacilli into experimental animals, as I have already said, has not been encouraging, and that any results worth having could be obtained from the use of minute doses of dissolved bacilli, such as Dr. Crofton recommends, seems to the writer highly improbable; at all events, the method ought first to be proved effective on animals before it is applied on any considerable scale to human beings.

Thus there would appear little reason to think that the application of protective inoculation to the prevention of tuberculosis would be of any use, even if it could be made without provoking the grave hostility of the people. That it has been found possible to apply antityphoid inoculation in the Army is because the soldier knows well from the experience of many of his fellows in India and South Africa the very grave risk from typhoid that he will have to face on active service, and—not least—because the Army consists of young men under military discipline. Even so, it was not carried through without much outcry; but it would be a very different sort of tune if any pressure were to be put upon the people to have their children inoculated against tuberculosis. It is only fair to Dr. Crofton to add that he never proposed any measure of compulsion, but I would ask him if he thinks any considerable amount of protective inoculation could be obtained without some form of compulsion?

The means for dealing prophylactically with tuberculosis appear to me to be threefold, and capable of classification under the three following heads:—(1) The amelioration of the conditions of life of the poor; (2) the cure of early cases; (3) the isolation of those who are acting as sources of infection.

The first of these means has been in action progressively for many years and is still going strong. The second has been worked by the great sanatorium movement initiated some ten years ago, and by the more recent tuberculosis dispensaries. If, regarded as a means of stamping-out tuberculosis, it has failed, it is because of the difficulty of getting hold of cases in the really early stages of infection, and one of the most promising of the many activities of our new tuberculosis officers would seem to be the hunting out of these early cases from among the contacts with persons who have recognised disease. The third method seems at last to be making headway, gradually, and in the face of considerable opposition. But the tide is flowing in its favour. It is the one method of the three which has not as yet been deliberately employed to any great extent, and it seems to me to contain the most promising germs of hope for the future.

I am, Sir, yours faithfully,

Cambridge, Nov. 11th, 1917. LOUIS COBBETT.

References.—1. THE LANCET, Oct. 27th, 1917, p. 657. 2. Roy. Comm. on Tuberculosis, 1911, Fin. Rep. App., vol. iii., p. 266. 3. Tub. Arbeiten a.d. Kaiserl. Gesundheitsamte, 1912, Heft. xi. 4. A. S. Griffith: Jour. of Pathol. and Bacteriol., 1913, vol. xvii., p. 323. 5. McFadyean: Jour. of Comp. Pathol. and Therap., 1899, vol. xii., p. 269. 6. Cobbett: The Causes of Tuberculosis, p. 389. 7. THE LANCET, 1915, vol. i., p. 625.

PROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—The account given by Dr. G. Archdall Reid in his letter published in THE LANCET of Nov. 3rd is a contribution of much importance to the practical side of the prophylactic treatment of venereal infections. It indicates that the disinfectant power of a 1/2000 solution of permanganate of potash *used without delay* after exposure to infection is sufficient to kill the microbes of both syphilis and gonorrhœa before they penetrate the tissues. Dr. Reid infers from this that more elaborate and cumbersome methods are unnecessary *if disinfection be carried out immediately:* and says that injections into the urethra and calomel cream are in that case quite unnecessary.

The success, however, of the method of disinfection which he advocates depends on its *immediate* employment, and also on the healthy and unabraded condition of the genital organs; and it has been shown by Metchnikoff's experiments, at least in the case of syphilis, that even calomel ointment of 30 per cent. strength is not to be depended on for complete safety if used *later* than 12 hours after exposure, though it is to be thus trusted when used within 12 hours. Dr. Reid also implies that inunction and injection are necessarily more cumbersome and involve more delay than the use of the solution advised by him. He probably employs the words "immediately" and "without delay" in their literal sense: and thus a question might be raised as to the comparative practical value of disinfectant appliances, one of which *must* be used *immediately*, while the other *may* be used within 12 hours after exposure to infection. It is to be remembered also that the proper use of calomel ointment is effectual whether or no there is any abrasion of the skin or mucous membrane.

I am, Sir, yours faithfully,

London, Nov. 17th, 1917. H. BRYAN DONKIN.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

SIR,—The letters of Dr. James F. Gemmel in THE LANCET for Oct. 20th, of Dr. R. H. Steen in THE LANCET for Oct. 27th, and of Dr. W. J. A. Erskine in THE LANCET for Nov. 17th, show the continually recurring tendency there is to criticise the arrangements made by the War Office in conjunction with the Board of Control for the care of those members of the fighting forces who have unfortunately suffered from a mental breakdown, but the real ground for these criticisms is far beyond, and is much wider than, the simple question of what fresh buildings can be erected or should be taken over—which really offer no solution to those in high authority, although they may be compelled to follow this course.

I am sorry to see in Dr. Gemmel's letter that he is apparently so unsympathetic—or, may I say, so un-democratic—as to classify his asylum patients dichotomously into paupers and criminals, and thus to reflect upon them purely accidental conditions for which they themselves are often not responsible and which in the main are so undeserved. In the view he adopts he overlooks the modern aspect of crime as the product of social circumstances rather than of atavistic or pathological defects; and have not our finest young fellows in the trenches and dug-outs shouldered the same burden and shared their risks side by side with Dr. Gemmel's despised classes, and are these classes, therefore, not entitled, for the sacrifices they have made and by moral right, to the deepest national gratitude? Indeed, one of the most comfortable and most efficient of our metropolitan hospitals is one in which these two types dwell harmoniously, and there are here no personal reflections such as are indulged in elsewhere, for one block is devoted to the soldier, whilst the others are at the service of those patients who are precisely of the class whom misfortune of another kind has compelled to seek a shelter in the asylum.

If our asylums are good enough for the soldier's father and mother, sisters, and other relatives, it is surely unjust, if not cruel, to deprive our sick sailors and soldiers of equal privileges; if they are not, then it is hypocrisy to pretend to persuade ourselves that we are doing our best for their relatives, and those engaged in the work should withdraw if they have any sense of shame. As to the stigma of pauperism, it is a well-known fact of experience that our public asylums are being more and more appreciated by the middle and lower-middle classes as the best homes of recovery for cases of mental illness. In fact, at Claybury, I had repeated applications to receive as patients those whose friends desired them to be under treatment at much higher rates than could be officially charged, and who in consequence had to be refused.

No one thought that the war would last so long as it has done, but everybody felt from the very commencement of hostilities that those who voluntarily offered their lives to defend human brotherhood, social justice, and our liberty should receive every personal and generous recognition as well as every medical and nursing care that the best skill could offer to them; and if the Bill which the Medico-Legal Society had drafted, and which was carried through its first reading in the House of Lords just before the war, could have been proceeded with, we should have heard nothing of the unsatisfactory treatment of our sailors and soldiers who had suffered a mental breakdown, nor of the cheap cant about the stigma imparted by asylums, asylum doctors, and asylum nurses—all of which is gradually dying out now that the value of asylums, which are hospitals of restoration as well as homes of care, and of asylum treatment is becoming more recognised and their methods more often adopted for all functional mental conditions.

I intend to propose at the next meeting of the Parliamentary Committee of the Medico-Psychological Association of Great Britain and Ireland, which is to meet on Nov. 27th, that there should be legal power (duly safeguarded) to treat all cases of mental breakdown for a period of six months without certification, an arrangement which Dr. George M. Robertson informs me is working admirably in Scotland, and I shall be glad to receive any comments from your readers.

I am, Sir, yours faithfully,

ROBERT ARMSTRONG-JONES, M.D.

105, Harley-street, Nov. 20th, 1917.

TREATMENT OF WAR NEUROSES.

To the Editor of THE LANCET.

SIR,—Your Parliamentary correspondent reports the reply of Mr. Macpherson to Colonel Clive with respect to the treatment of shell-shock patients in London. All familiar with the circumstances will be glad to read Mr. Macpherson's admission that it may be possible to discontinue the neurological centre in London as a treatment centre.

A large conference of neurologists recently met at the War Office. I have reason to know this, as they unanimously rejected a scheme in which I am interested, in spite of the fact that the Director-General and the neurological adviser of the A.M.S. had both agreed to give it a trial, and the President of the Special Medical Board had expressed himself as optimistic concerning its success.

My scheme, now known as the "Country Host Institution," was originally intended for the benefit of pensioners and the Ministry of Pensions and London War Pensions Committee have sanctioned it experimentally to the extent of 30 cases. Half that number of pensioners have already been sent off and the early reports are very satisfactory.

As the public response to my request for "hosts" was instantaneous and widespread, I had some hundreds to spare and offered these to the War Office, so that some of the undischarged men suffering from war neuroses might also benefit. It is this offer which the conference refused. The principles of the scheme were as follows:—

The patient will be surrounded with a healthy instead of a neurotic subconscious influence. He will be removed from the harmful sympathy of friends and from the noise and rush of town life, to the kind but firm care of his "host" and the fresh air and peace of the country, where he can be encouraged to perform a small but increasing amount of simple work.

In order to carry out this treatment it is suggested that:—

1. Certain mild cases of "shell shock" and war neurasthenia shall be selected for treatment singly at country places where suitable accommodation has been offered by landowners, farmers, gardeners, &c.
2. The patient shall be billeted on the "host" upon the usual terms (3*s*. per diem), and shall perform appropriate work, according to directions communicated to the "host" by the medical officer in charge.
3. Pay, separation allowances, &c., shall be the same as if the soldier were in hospital.
4. Even when cured the patient shall not be called upon to perform military service abroad, but it is confidently hoped that he may be made fit for home service.
5. Patients shall be visited at stated intervals, by the medical officer under whose care they are, and in case of illness may be transferred to the nearest military hospital.
6. Complaints may be sent either by the patient or by the "host," to the medical officer in charge of the scheme.
7. The cases shall be selected by the medical officers of the Neurological Section of the 4th London General Hospital, acting in consultation with the medical officer of the scheme.

I am informed that the conference which threw out my scheme has decided in favour of opening a series of hospitals containing a large number of beds, and seme of these will probably be in urban centres for convenience of management and transport. I sincerely hope that the conference may yet consider my scheme, for I have every reason to believe that the patriotic hosts on whom its success must depend could be found in very large numbers.

Medical experience and common sense agree that (1) country life and conditions tend more towards the cure of neuroses than the noise and rush of towns, and that (2) nervousness is extremely communicable. If these premisses are admitted a very little thought should be sufficient to convince every unbiassed person, whether neurologist or layman, that it is wrong to congregate nerve-shattered men in hospitals, unless the severity of their symptoms renders it unavoidable, and that it is unpardonable to keep even those serious cases in a town, especially in London where air raids are frequent.

It seems obvious that, however convenient for the authorities, it is exceedingly harmful to the men that they should be congregated, the mild along with the severe, and perhaps within an air-raid area. The following extract from a letter sent me by Archdeacon Dray will give an experienced eye-witness's impression of the effect of air-raids on nerve-shattered men:—

"Last night we had a repetition of former experiences in these —— schools, where 200 men in varying stages of helplessness act and react upon each other day by day, and during the raids are nearly frantic with terror, numbers of them writhing under their beds or falling back into their former palsied condition, their eyes transfixed and their twitching faces wearing a look of abject horror. It is pitiful to hear their repeated appeals: 'Why can't I go into the country, somewhere where it is quiet and restful? Is a man who has gone through what we had at the front to be kept in this hell until he loses his reason,' &c. The nurses are simply splendid in their calm bravery but I seriously wonder how long some of them can stand the spectacles presented," &c.

The ideal treatment, for all the milder cases at any rate, is to send them singly to the country, where they may recuperate in peace and quietness, performing suitable tasks in the open air and with healthy mental influences round them. The Country Host Institution could send over 200 men to excellent country houses within a week or two. Yet the authorities, who consider it wise to allow the men out into the London streets, refuse to send them to gardens and farms where they would be under supervision.

It will very greatly further the views expressed above if any medical men who are in sympathy with them will communicate with me.

I am, Sir, yours faithfully,

13, South Eaton Place, Belgrave-square, S.W. 1, Nov. 19th, 1917. THOMAS LUMSDEN.

SIR RICHARD CROFT AND THE CASE OF THE PRINCESS CHARLOTTE.

To the Editor of THE LANCET.

SIR,—The annotation entitled "The Vindication of a Medical Reputation" in your issue of Oct. 27th hardly does justice to Sir Richard Croft. As the son-in-law and successor of Denman, who was the leader in obstetric medicine in London, and one of the best and most cultured of men, it may be safely concluded that Croft would have the fullest midwifery training then available. British obstetric science was already a great tradition, coming down from Douglas, Smellie, and William Hunter (who, by the way, attended with a midwife the queen of George III.), and training in that department by lectures and clinical work was given by Denman and others, although it had not yet taken its place alongside of other departments of medicine in university and collegiate courses. Wadd in 1824 states that Sir R. Croft had the degree of M.D., "possessed much practical knowledge," and "for thirty years continued to practise with the highest credit and success." Brodie, writing long afterwards, in 1865, speaks of Croft's "great reputation," and that he was "a man of acute feelings, a thorough gentleman, having a high sense of honour, and of a kind and liberal disposition."

As regards the case of the Princess Charlotte in 1817, the letters quoted in Playfair's "Midwifery" may be supplemented by Dr. Matthew Baillie's own account of the occurrence. It is taken from a manuscript letter which has been preserved, addressed to the Princess's mother, and those who know Baillie's absolute candour of mind and character will attach the more value to his words. He writes:—

"This sad event has not arisen from any error in the treatment of her case. The Princess had enjoyed more than her usual health previous to her labour. The labour was exceedingly tedious, for it lasted 50 hours, but it was attended with no unusual circumstances, except a slight contraction of the womb, retarding the passing away of the after-birth. The Princess was well for more than three hours after the labour. She was suddenly seized with uneasiness in her chest, great difficulty of breathing, extreme restlessness, and a very rapid, feeble, and irregular pulse. Sir Richard Croft, Dr. Sims, and myself endeavoured to support her sinking frame with every kind of cordial, —— but the Princess died in two hours from the beginning of the attack. Sir Richard Croft was indefatigable in his attention and zeal through out the whole of this very sad business. He never quitted for more than a few minutes at a time the bedchamber of the Princess from the beginning of her labour until she expired. The child was a male, well formed, and stillborn. ..... About a pint of coagulated blood was found by examination in the womb and two ounces of water were found in the bag surrounding the heart. These may in some measure account for the fatal event."

The details given in this report confirm Playfair's inference that the cause of death was pulmonary embolism, then unknown. Embolism, it may be remembered, was only discovered by Kirkes and Virchow a generation later.

I am, Sir, yours faithfully,

Devonshire-place, W., Nov. 14th, 1917. R. HINGSTON FOX.

Mr. Colston Wintle, L.R.C.P., M.R.C.S., has been elected for the fourteenth year chairman of the health committee of the Bristol town council.

Dr. Barclay Baron, lately Lord Mayor of Bristol, has received the insignia of the Russian Red Cross Order for his successful work as president of the Bristol Russian Red Cross Fund.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. J. F. Russell, M.C., R.A.M.C., attached Royal Welsh Fusiliers, received his medical education at the Middlesex Hospital, London, and qualified in 1916, whereupon he joined up. The award of the M.C. was recorded in THE LANCET of August 25th, 1917, p. 332.

Capt. E. Phillips, R.A.M.C.

Died.

Lieut. H. F. Ransome, R.A.M.C., was educated at the Owens College, Manchester, and at St. George's Hospital, London, and qualified in 1892. He was in practice at Bowdon, Altrincham, where he was surgeon to the local hospital, and since joining the R.A.M.C. was in charge of Queen Mary's Military Hospital at Whalley, where he died.

Lieut. G. Taylor, R.A.M.C.

Wounded.

Capt. H. G. Rice, R.A.M.C., attached Durham Light Infantry.
Capt. H. W. Gush, R.A.M.C.
Major W. Bapty, Canadian A.M.C.
Capt. H. F. Dunstan, Australian A.M.C.
Major A. V. Meehan, Australian A.M.C.
Capt. G. D. Eccles, R.A.M.C.
Capt. W. Harmens, R.A.M.C., attached Cheshire Regt.
Capt. D. G. Kennard, R.A.M.C., attached Yeomanry.
Capt. G. Sutherland, R.A.M.C., attached Scottish Rifles.
Lieut. J. Avery, R.A.M.C., attached Essex Regt.
Capt. J. Young, R.A.M.C., attached Durham Light Infantry.
Capt. O. J. Ellis, Australian A.M.C.
Capt. R. M. Thomson, Australian A.M.C.
Capt. C. G. Brentnall, R.A.M.C., attd. Lancashire Fusiliers.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of edical men are reported :—

Lieut. T. H. W. Waller, Gloucestershire Regiment, killed in action, only son of Dr. A. W. Waller, of Stroud, Gloucestershire.

Capt. D. D. A. Anderson-Berry, Royal Scots Regiment, killed in action, only son of Dr. D. Anderson-Berry, of Highgate, London, N.

Capt. J. F. Russell, M.C., R.A.M.C., attached Royal Welsh Fusiliers, killed in action, eldest son of Dr. W. F. Russell, of Holyhead.

Lieut. V. W. Bennett, Royal Engineers, killed in action, eldest son of Lieut.-Col. V. B. Bennett, I.M.S.

Private C. E. L. Cox, Canadian Infantry, killed in action, eldest son of Dr. A. E. Cox, of Grange-over-Sands, and late of Southport.

Lieut. G. L. Brown, Loyal North Lancashire Regiment, killed in action, youngest son of Dr. A. Brown, of Hatch End, Middlesex.

Second Lieut. S. G. Cunningham, Royal Field Artillery, killed in action, youngest son of Dr. J. Cunningham, of Campbeltown, Argyllshire.

THE HONOURS LIST.

The following awards to medical officers are announced. e acts of gallantry for which the awards were made are yet announced. All are members of the R.A.M.C. unless erwise stated. The dates in parentheses, in those cases ere bars have been awarded, refer to the number of E LANCET in which a record of the original decoration l be found:—

Distinguished Service Order.

Temp. Capt. G. W. Armstrong; Major S. V. Appleyard, Australian M.C.; Major W. W. S. Johnston, M.C., Australian A.M.C.

Bar to the Military Cross.

Capt. W. McM. Chesney, M.C. (June 26th, 1915, p. 1373); Temp. Lt. R. W. Hogg, M.C. (Dec. 16th, 1916, p. 1034); Temp. Capt. H. F. Wilson, M.C. (Oct. 6th, 1917, p. 550); Temp. Capt. M. B. Lawrie, M.C., South African M.C. (August 4th, 1917, p. 176).

Military Cross.

Capt. B. G. Beveridge; Capt. V. C. Brown, Australian A.M.C.; Temp. Capt. D. S. Cassidy, Lt., Canadian A.M.C.; Capt. G. Eustace; Lt. F. G. Harper; Temp. Capt. J. Jack; Capt. C. H. Kellaway, Australian A.M.C.; Capt. H. H. Leeson; Temp. Capt. P. M. MacLachlan, Lt. J. S. McConnachie; Capt. P. J. F. O'Shea, Australian A.M.C.; Temp. Capt. A. W. Young.]

FOREIGN DECORATIONS.

Italian.

Silver Medal for Military Valour.—Deputy Surg.-Gen. O. W. Andrews, R.N.; Fleet-Surg. G. E. Duncan, R.N.

OBITUARY OF THE WAR.

JOSEPH PATRICK PEGUM, L., L.M. R.C.P.S. IREL.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. P. Pegum, who was killed in action on Sept. 26th at the age of 25 years, was youngest son of the late James Pegum, of Glin, co. Limerick. He was educated at Mungret and Clongowes Wood Colleges, studying medicine at the Royal College of Surgeons in Ireland, where he belonged to the Officers' Training Corps. He qualified in April, 1916, and was immediately given a commission in the R.A.M.C., becoming attached to the King's Shropshire Light Infantry. After working for long under conditions of great danger and difficulty he was killed by the explosion of a shell. Captain Pegum was a keen sportsman, excelling at cricket, lawn-tennis, fishing, and shooting. His superior officer writes of him as a splendid battalion medical officer and one whose loss was keenly felt.



JAMES HARCOURT CECIL GATCHELL, L.A.H. DUB.,
MILITARY CROSS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. H. C. Gatchell, who was killed in action on Sept. 27th, was youngest son of Rev. J. H. Gatchell, D.D., rector of Earlsgift, co. Tyrone. After qualifying in 1912 he made several voyages as ship's surgeon to the Elder Dempster Line, being present at the taking of Derala by the British. Joining the R.A.M.C. in 1915, he was attached to the Lancaster and later to the Sussex Regiment, earning his Military Cross in August last. The award runs : "He worked for many hours in the open under shell-fire, frequently dressing men on the spot where they were hit. He worked unceasingly for 16 hours without food. His aid-post was blown in and he was wounded, but he refused to go down to the dressing-station till ordered to do so by his commanding officer." He was killed by a shell two months later while he was again dressing cases in the open. Fellow-officers write of Captain Gatchell's unfailing cheerfulness amid all the circumstances of trench life.



THE Albert Medal has been awarded to Surgeon Probationer Robert Sydney Steele Smith, R.N.V.R., for services rendered by him as medical officer on a torpedoed ship.

TRURO NAVAL HOSPITAL.—The Admiralty Medical Department has requested the authorities of the Truro Naval Auxiliary Hospital to provide additional accommodation for 50 patients, and it has been decided to do so.

Obituary.

GEORGE BROWN, M.R.C.S. ENG., L.S.A.,

LATE DIRECT REPRESENTATIVE FOR ENGLAND AND WALES ON THE GENERAL MEDICAL COUNCIL.

WE regret to announce the death of Mr. George Brown, who died at his residence in Exeter on Nov. 15th, in the seventy-third year of his age.

George Brown was born at Callington, Cornwall, and received his professional education at the medical school of Charing Cross Hospital, where he was both a scholar and medalist. After holding the usual resident appointments at the hospital, and being for a time demonstrator of anatomy in the school, he entered general practice in the north of London, and during that period became a prominent representative of the advanced reform party in the medical profession. He was a forceful public speaker and vigorous writer, and was prepared to exercise his talents on behalf of the general practitioner anywhere and at any time. The inclusive nature of his advocacy prevented him from securing the power for good that might have been his had he directed his reforming energies more to particular abuses, and had he been less perfectly convinced that all the consultant section of the profession were leagued against the general body.

In 1897 he got his chance as a reformer, for he became a direct representative for England and Wales on the General Medical Council. He owed his success at the election largely to a promise made to the constituency in his election address that he would oppose the impending legislation which shortly afterwards materialised into the present Midwives Act, the election turning almost exclusively upon a question which, deeply as it affected the interests of the medical profession, had already passed out of the sphere of the General Medical Council. For ten years he was a member of the Council, but neither his style of speaking nor the matter of his speeches exercised much influence on the opinions of that body—his onslaughts were too vague, his criticisms too general, and his remedies too crude. But those most opposed to his methods or at variance with his theories recognised in him an enthusiast for the cause of right as he conceived it.

Some 15 years ago George Brown retired from practice in London, which had become arduous to him in a damaged condition of health, and returned to his native town of Callington, where he was at work when the war broke out. In 1915 he went to Exeter and became honorary physician to the Exeter Dispensary. In the spring of this year he was injured in a street accident and had remained in bad health until he died.

George Brown worked hard all his life, and if he realised some only of his ambitions it must be remembered that those ambitions were large and ill-defined. But what he was able to perform was all to the good. He wrote a good many pamphlets on medical subjects and two small books, "Aids to Anatomy" and "Aids to Surgery," which at their date were found useful to many students. He was editor of the *Medical Times*. He married late in life and leaves a widow and one young son, to whom we offer our real sympathy.

JAMES HYSLOP, M.B., C.M. EDIN., D.S.O.,

LIEUTENANT-COLONEL, S.A.M.C.

Lieutenant-Colonel J. Hyslop, of the South African Medical Corps, died at the Sanatorium, Pietermaritzburg, on Oct. 5th, at the age of 61. He was born in Kirkcudbrightshire and educated at Hutton Hall and at Edinburgh University, where he graduated M.B., C.M. in 1879. After studying at Berlin, Vienna, and Munich, he took up appointments at the Border Counties Asylum at Melrose and at the Morningside Asylum, Edinburgh, and subsequently went to South Africa, where, in 1882, he was appointed medical superintendent of the Natal Government Asylum, Pietermaritzburg, now known as the Natal Mental Hospital. From this post he retired two years ago, after holding it for 33 years. Colonel Hyslop served with the Natal forces in the Boer War, and for his services was awarded the D.S.O. Some 18 months ago he took over the duties of Director of Medical Services at the Durban base, but his health breaking down he returned to Pietermaritzburg, where he died, the immediate cause of his death being pleurisy and pneumonia. Colonel Hyslop, who was president of the Natal Medical Council, was the Natal delegate to the Victoria Plague Conference in 1899 and chairman of the Durban Plague Conference held in the same year. He was the author of a work dealing with the anatomy of the central nervous system.

EDMUND FREDERICK TANNEY PRICE, M.B., C.M. EDIN.,

RADIOLOGIST TO CHALMERS' HOSPITAL, EDINBURGH.

THE death of Dr. Edmund Price occurred on Oct. 27th under somewhat tragic circumstances. He was, indeed, one of the many instances in these times of a man sacrificing his life at the call of duty, for in the middle of a full professional career, in which there was small opportunity for leisure, Dr. Price, at the age of 54, joined the 1st Battalion City of Edinburgh Volunteers when it was inaugurated, with them drilled regularly, sometimes standing guard all night, and it was while attending manœuvres with his battalion that he met his untimely death.

Edmund Price belonged to a medical family, for his father, Dr. A. G. Price, was a civil surgeon in the Indian Medical Service, four brothers were medical men and he is survived by—besides his widow and a married daughter—three sons, two of whom are qualified and serving in His Majesty's forces, while the third is a medical student. Born in India 55 years ago, he received his early education there and came to Edinburgh University later. Graduating in 1884, he at once went into general practice, and for 22 years was well known and highly esteemed as a successful physician in Edinburgh. During that period he obtained a wide knowledge of his profession and amassed a large amount of clinical material which was to stand him in good stead when he took up X ray work. This had been attracting his attention for the last few years that he was in general practice, and in 1906 he determined to specialise in the subject.

As a radiographer he immediately found a new sphere of usefulness, and his work was quickly recognised to be of a very high order. He was skilful and painstaking. He made a careful study both of the anatomical and clinical aspects of his specialty, and, moreover, took the opportunity, whenever possible, of being present at the operations on patients whom he had X rayed. By these means he acquired great experience in the interpretation of his plates, so that the profession came to value his opinion and to appreciate the assistance he was able to render them. His caution in not being led into reading more in his plates than was warranted gave him a well-earned reputation as a trustworthy expert witness. With regard to the therapeutical side of his specialty, Dr. Price quite recognised its limitations, and this attitude served still further to gain for him the confidence of the profession. In 1907 he was appointed radiologist to Chalmers' Hospital and that appointment he held till the time of his death. He was a member of the Obstetrical Society, the Edinburgh Medico-Chirurgical Society, and the Royal Society of Medicine. Among his contributions to the literature of radiology was a paper published in 1911, on "The Diagnosis of Urinary Calculi by means of the X Rays," and an important article published in the *Edinburgh Medical Journal* in 1914, entitled "The Röntgen Ray and Bismuth Meal Method as an Aid in the Diagnosis of some Alimentary Diseases." In addition he contributed the X ray illustrations of the "Manual of Surgical Anatomy" (Beesley and Johnston).

Dr. Price's life was too fully occupied by his professional work to allow of much time for other outlets for his energetic nature, but two things appealed to him strongly—namely, ambulance work and volunteering. He was, since 1888, a successful lecturer and examiner under the St. Andrew's Ambulance Association and did excellent work in this connexion: while his association with the Volunteers dates back to the time when, as a student, he joined the 4th Battalion Royal Scots.

A FOOD ECONOMY SERMON.—In accordance with a proposal by Sir Arthur K. Yapp, Director of Food Economy, the Bishop of London will preach a special food economy sermon on behalf of the League of National Safety at St. Paul's Cathedral, on Sunday next, Nov. 25th.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a Comitia of the Royal College of Physicians on Oct. 25th, and a Council meeting of the Royal College of Surgeons on Nov. 8th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon the following candidates (including seven ladies), who have passed the final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary bye-laws:—

Sawy Ahmed, London Hospital; Edwin Baylis Ash, Birmingham University; Ruth Balfour, Royal Free Hospital; Noel Arthur Hamilton Barlow, Guy's Hospital; George Edmondson Birkett, Cambridge and Manchester Universities; John Anthony Birrell, University College, Cardiff, and St. George's Hospital; Anthony Blackstock, King's College Hospital; Numa Sylla Bonard, Geneva University; Geoffrey Bourne, St. Bartholomew's Hospital; John Walker Brash, St. Mary's Hospital; Arthur Bulleid, Guy's Hospital; Horace Braithwaite Bullen, Cambridge University and St. Bartholomew's Hospital; Finlay Cameron, Charing Cross Hospital; William Arnold Clements, Birmingham University; Bernard Stanley Collings, University College Hospital; Julien David Constantin, St. Bartholomew's Hospital; George Wilfred Coombes, London Hospital; John Rudolph Cox, Guy's Hospital; Eustace Henry Taylor Cummings, Liverpool University; Dennis Reginald Curnock, Charing Cross Hospital; William Leslie Dandridge, Cambridge University and St. Bartholomew's Hospital; Hari Das, Calcutta University and University College Hospital; Thomas Davies, University College, Cardiff, and University College Hospital; Leslie Perkins de Abrew, Ceylon Medical College and London Hospital; Bartholomew Gidley Derry, Bristol University; Wilton Lionel de Silva, Liverpool University; James Douglas Dimock, Sheffield University and Middlesex Hospital; John Stanley Ellis, Cambridge University and Guy's Hospital; Maximilian Walter Geffen, University College Hospital; Satyapriya Ghosh, Calcutta University and Royal Free Hospital; Edward Austin Gibb, Cambridge University and St. Thomas's Hospital; Johan Coenraad Gie, Guy's Hospital; *Charles Hawkins Gilmour, Toronto University and Middlesex Hospital; Lionel Charles Goument, St. Bartholomew's Hospital; Lilian Maud Griffiths, University College, Cardiff, and Royal Free Hospital; Douglas Vernon Halstead and Eric Clark Hinde, Guy's Hospital; Wilhelm Otto Holst, Middlesex Hospital; Percy Gilbert Horsburgh, St. Bartholomew's Hospital; *Reginald Hunter, Durham University; John Wilkinson Davis Hyde, University College Hospital; Clifford Venning Isard, St. Thomas's Hospital; Thomas Glyn James and Naunton Reginald Jenkins, University College, Cardiff, and Westminster Hospital; Montagu Horace Jupe, Cambridge University and London Hospital; Nai Kamchorn, Guy's Hospital; David John Adams Lewis, London Hospital; Emily Catherine Lewis, Royal Free Hospital; Thomas Parry Lloyd, London Hospital; Alice Lloyd Lloyd-Williams, Royal Free and St. Mary's Hospitals; Albert Victor Lopes, St. Bartholomew's Hospital; James Galway McCann, St. Thomas's Hospital; Joseph Sydney Matthews, London and University College Hospitals; Leslie Clifford Moore, Liverpool University and St. Thomas's Hospital; Arthur Harry Morris, Bristol University; William Percival Nelson, Birmingham University; Joseph Warren McKillop Nicholl, Cambridge University and Middlesex Hospital; William Drew Nicol, St. Bartholomew's Hospital; Francis Crawford Odling, Cambridge University and St. Thomas's Hospital; David Forsyth Panton, London Hospital; Christopher Stanley Parker and Reuben Woodland Payne, Charing Cross Hospital; Charles Farrell Rainer, London Hospital; Hallock Ratnarajah, Ceylon Medical College and St. Mary's Hospital; Frank Neon Reynolds, St. Thomas's Hospital; Herbert Eyton Rhodes, Cambridge University and London Hospital; Helen Roth, Birmingham University; Henry Bret Russell, St. Thomas's Hospital; Khan Sahib, St. Thomas's Hospital; John James Savage, Oxford University and St. Bartholomew's Hospital; Simeon Cyril Shaw, Middlesex Hospital; Cuthbert Shaw-Crisp, St. Mary's Hospital; Charles Ernest Alan Shepherd, St. George's Hospital; Charlotte Annie Shields, Royal Free Hospital; Maurice Oliver Simpson, Middlesex Hospital; Ram Sinha, London Hospital; Basil Lyndon Skeggs, St. Bartholomew's Hospital; Robert Cyril Wilmer Staley, Guy's Hospital; Harman Taylor, Liverpool University; Harold George Taylor, Cambridge University and St. George's Hospital; Oswald Stuart Thompson, Cambridge University and St. Thomas's Hospital; John Ferdinand Twort, London Hospital; Percy Ward, Sheffield University; Charles Horne Warner, Middlesex Hospital; Arthur William Wells, London Hospital; Arthur Winfield, Cambridge and Liverpool Universities; Keith Montague Cumberland Woodruff, Guy's Hospital; and Ephraim Benjamin Woolf and Israel Hyman Zortman, London Hospital.

* M.R.C.S. granted Oct. 11th last.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of the Fellows and Members of the College was summoned for 3 o'clock on Thursday, Nov. 15th, when the senior Vice-President, Mr. Charters J. Symonds, took the chair only some 15 Fellows and Members were present, though the quorum is 30. When a quarter of an hour had elapsed and still those present had not reached the required number, the Vice-President declared that as a quorum had not attended it was his duty to state that the meeting could not be held. Last year no quorum was present, but an informal discussion was held on the annual report of the Council. It had been suggested that no meeting should be summoned this year as so many of the Fellows and Members of the College are serving in the Army and Navy; and, indeed, the Society of Members advised the Council not to have the meeting, but after discussion it was resolved that an attempt should be made. As the event has shown, it has proved a failure. While the meeting was waiting the necessary 15 minutes a Member present asked the chairman whether the members of Council present were counted in the total, and he was told that the two members of the Council who were present were included.—At the Primary Examination in Anatomy and Physiology for the Fellowship held on Nov. 7th, 8th, and 13th, for which 25 candidates presented themselves, 12 candidates (including four ladies) were successful and 13 were rejected. The following are the names and schools of the successful candidates:—

Michael Waldo Boone Bulman, London Hospital; Rustam Nusserwanji Cooper, Bombay University and Middlesex Hospital; Hilda Treloggen Haggett and Edith May Hall, London School of Medicine for Women; Henry Lewis Heimann, University College and Middlesex Hospital; Oscar Stanley Hillman, Middlesex Hospital; Charles Melton Ockwell, Guy's Hospital; Dorothy Pantin, London School of Medicine for Women; Robert Lindsay Rea, Queen's University, Belfast, and Middlesex Hospital; Esther Rickards, London School of Medicine for Women; William George Dismore Upjohn, Melbourne University and Middlesex Hospital; and John Whittingdale, Cambridge University and St. Bartholomew's Hospital.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Arthur Lawrence Abel, University College Hospital; Frank Macdonald Allchin, Westminster Hospital; Hannah Katherine Alton, London School of Medicine for Women; Elizabeth Labrey Ashby, University of Birmingham; Robert Townly Bailey, Charing Cross Hospital; Marjorie Ada Blandy, London School of Medicine for Women; Marian Noel Bostock, St. George's Hospital and London School of Medicine for Women; Margaret Stote Glen Bott, London School of Medicine for Women; Francis Caldecott, Guy's Hospital; Hari Das, University College Hospital; Thomas Anwyl Davies, St. Thomas's Hospital; Phillis Decima Dixon, London School of Medicine for Women; William Henry Dupré, St. Bartholomew's Hospital; Kenneth Reed Hill, University College Hospital; Bertha Hinde (honours, distinguished in Surgery), London School of Medicine for Women; Harry Mainwaring Holt, University of Leeds; Henry Cecil Jennings, St. Thomas's Hospital; William Arthur Edward Karunaratne, University College Hospital; Walter Henry Lloyd, Middlesex Hospital; Bruce Maclean, University College Hospital; Sinnethamby Muttiah, London Hospital; Martin Herbert Oldershaw, University College Hospital, Noel Olivier, London School of Medicine for Women; Alexander Edward Patrick Parker (honours, distinguished in Medicine and Surgery) (University Medal), Westminster Hospital; Mariamne Olive Ramsay, London School of Medicine for Women; Cedric Sydney Lane Roberts, Guy's Hospital; Kenneth Mackinnon Ross, London Hospital; Henry Rowan and Morris Schwartz, University College Hospital; Simeon Cyril Shaw, Middlesex Hospital; Ellen Sylk, London School of Medicine for Women, and Charles Horne Warner and Ralph Edwin Stuart Webb, Middlesex Hospital.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Ruth Balfour, London School of Medicine for Women; Guy William John Bousfield, St. Thomas's Hospital; Percy Selwyn Clarke, St. Bartholomew's Hospital; Humphrey Leonard George Foxell, University College Hospital; Blanche Aspasie Marion Henderson, Victoria University of Manchester and Charing Cross Hospital; Claude Herbert Marshall, Guy's Hospital; Marie Matilda Alice Moralt, London School of Medicine for Women; Alan Selby-Green, Middlesex Hospital; Aubrey Leonard Telling, University of Leeds; and James de Silva Wijeyeratne, University College Hospital.

Group II.—Frank Percy Bennett, St. Mary's Hospital; Lionel Bernard Goldschmidt, King's College Hospital; David John Adams Lewis, London Hospital; William Leslie Thomas, Middlesex Hospital; and Naomi Tribe, London School of Medicine for Women.

B.S. EXAMINATION (*For Students who graduated in Medicine in or before May, 1904*).

Henry Harold Greenwood (honours), University of Leeds.

EXHIBITION OF ARTS AND HANDICRAFTS.—The Exhibition of Arts and Handicrafts which has recently been held at the Central Hall, Westminster, showed by a useful and artistic display that village industries have by no means died out, and demonstrated the possibilities of accelerating their revival as a means of helping our crippled sailors and soldiers. There were instructive exhibits of handweaving, stained glass, pottery, embroidery, lace, metal-work, bookbinding, basket-work, and so forth, by both individual exhibitors and societies, the latter including the National Institute for the Blind, which is doing so much at the present moment for blinded sailors and soldiers, the Wych School for the Deaf, Hampstead, N.W. (after Christmas the institution will remove to Haslemere), and the Barclay Workshop for Blind Women, Edgware-road. Specimens of the work done by members of the interned Naval Brigade in Holland and by the blinded sailors and soldiers at St. Dunstan's Hostel were of particular interest, as were also the models of the Maternity and Nursing Departments at the Royal Free Hospital, which had been mainly constructed by the sailor and soldier patients who have been wounded in the

war. Many of the articles were sold for the benefit of the wounded. The catalogue constitutes a useful work of reference with regard to what is being done and what can be done to restore something of the old industrial life of the country.

ROYAL INSTITUTION OF GREAT BRITAIN.—Professor J. A. Fleming, D.Sc., F.R.S., will deliver a Christmas course of six illustrated lectures (adapted to a juvenile auditory) on "Our Useful Servants: Magnetism and Electricity." The subjects and dates are as follows: Magnets and the Magnetic Compass, on Dec. 27th; Electricity and Electric Currents, on Dec. 29th; the Electric Current as a Heater and Chemist, on Jan. 1st; Electricity as an Illuminator and Doctor, on Jan. 3rd; Electric Dynamos, Motors, Transformers, and Railways, on Jan. 5th; Electric Telegraphs and Telephones, on Jan. 8th. The subscription for non-members to this course is one guinea for adults, but for those under 16 half-a-guinea. Tickets may now be obtained at the office of the institution, 21, Albemarle-street, W.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At a meeting of this society to be held at the West London Hospital on the evening of Friday, Dec. 7th, at 8.30 P.M., papers will be read as follows: (1) "The Methods of Detecting Simulated Deafness," by Mr. Richard Lake; (2) "The Methods of Detecting Simulated Blindness," by Mr. Percy Dunn. Mr. Mark Hovell, Mr. A. Bruce Roxburgh, Mr. Herbert Tilley, Mr. J. F. O'Malley, Colonel E. M. Wilson, Major Goldsmith, and Captain McCulloch are expected, among others, to take part in the discussion. Any Service medical officers or any other medical men interested in the subject of the detection of malingering are invited to take part.

THE SALARIES OF POOR-LAW MEDICAL OFFICERS.—The Poor-law Union Association has considered the following resolution transmitted by the Shipston-on-Stour board of guardians:—

That the Local Government Board be requested to rescind the Order which compels all boards of guardians to pay their medical officers at least the same salaries as those at which they were appointed, although their work has been very largely reduced, and this board earnestly solicits the help of the Association of Poor-law Unions to secure this alteration, which they have proved by experience will not only save the taxpayers many thousands of pounds a year, but also enable all boards of guardians to give medical relief to old-age pensioners and others without tainting them with pauperism.

The council of the association has disagreed with the resolution, being of opinion that the suggested arrangement was not economically sound as a matter for general adoption.

ROYAL permission has been granted to Mr. James Berry, F.R.C.S., to wear the Insignia of the Fourth Class of the Order of the Star of Roumania (with swords) conferred upon him by the King of Roumania in recognition of his services in that country under the auspices of the British Red Cross Society and the Order of St. John of Jerusalem in England during the present war. Mr. Berry has also received similar permission to wear the Insignia of the Third Class of the Order of St. Sava conferred upon him by His Majesty the King of Serbia in recognition of services which he had previously rendered to the Serbian sick and wounded.

Dr. Walter Henry Pollard has been elected Mayor of Smethwick.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: D. M. Black, F. L. H. MacDowel, R. Pollok, A. J. Pollock, E. A. Gibb.

The following appointments have been notified: Staff-Surgeons H. Cooper and R. McGriffin to the *Vivid*, additional, for disposal; Acting Staff-Surgeon D. R. D. Wilkie to the *Victory*, additional, for disposal; Surgeon A. J. Tozer to the *Powerful*. Temporary Surgeons: W. H. de Pre, to *Pembroke*, additional, for Chatham Hospital; A. T. Woodward to *Vivid*, for disposal; R. Pollock, to *Vivid*, additional, for Plymouth Hospital; A. J. Muirhead, to *Victory*, additional, for disposal; W. A. McKerrow, to *Victory*, for R.N. Division; H. L. G. Foxell, to *Victory*, for disposal; H. Rowan and A. L. Abel, to *Pembroke*, additional, for Chatham Hospital; E. F. Deacon, to Chatham Hospital; and H. B. Maitland, to Haslar Hospital.

ROYAL ARMY MEDICAL CORPS.

To be temporary Lieutenant-Colonels: Lieut.-Col. R. Bruce, D.S.O., Gordon Highlanders (T.F.), Temp. Major A. D. Reid, Major J. M. Cowan (T.F.), Temp. Major R. E. Wodehouse (Canadian A.M.C.).

Majors relinquishing the rank of temporary Lieutenant Colonel on ceasing to command a Training Centre: Bt. Lieut.-Col. B. A. Craig, A. N. Fraser, D.S.O.

Officers granted temporary rank whilst serving with the Staincliffe War Hospital:—As Major: J. Russell. As Captains: H. Keighley, G. S. Mill.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Major R. N. Woodley, D.S.O., Temp. Capt. A. Jones, M.C.

Temp. Capt. J. W. Ross, Canadian A.M.C., to be temporary Major.

Temp. Major H. A. Croll, from Canadian Reserve Cavalry Regiment, to be temporary Captain.

Temporary Lieutenants to be temporary Captains: R. R. Larmour (Canadian Army Dental Corps), A. H. L. Campbell (Canadian Army Dental Corps), D. S. Macbean, L. Pern, S. C. Shanks, J. Glaister, W. J. Poole, C. W. Macpherson, V. St. L. Pinnock, F. S. Poole, W. Lesey, E. A. C. Beard, R. Curle, N. Purcell, G. W. Harrison, E. R. Thompson, D. L. Carmichael, R. J. McFeeters, H. Heathcote, F. N. Marsh, J. L. Rubidge, P. A. Hall, C. L. McDonagh, H. T. Howell, E. A. Donaldson Sim, H. R. Grellet, A. H. Porter, J. Fanstone, J. B. Ferguson, G. F. Spicer, H. E. M. Baylis, A. S. Bradley (late Staff Surgeon, R.N.).

To be temporary Captains: H. S. Moore, C. D. Kean, S. Y. Wahl, A. G. Howson, G. B. Burwell, M.C., E. M. Eaton, J. G. Greenfield, A. C. Sturdy, M.C., A. L. Gwiney (South African Medical Corps), A. H. Lawrence (South African Medical Corps).

H. D. Welply, late temporary Captain, is granted the honorary rank of Captain.

To be Second Lieutenant: G. Bidwell (South African Medical Corps).

To be temporary Lieutenants: C. W. S. Boggs, H. Parsons, H. Tipping, T. C. Graves, J. A. C. Smith, H. Love, W. H. Condell, N. S. Williams, H. S. Campion, J. B. McMorland, B. W. Skinner, D. McCormack, C. S. Attlee, H. F. Penman, W. H. Ogilvie, G. Hoffmann.

L. W. Darrah to be temporary honorary Lieutenant.

Officers relinquishing their commissions: Temp. Lieut.-Col. R. H. Starling, Temp. Lieut.-Col. J. H. Brooks (on account of ill-health), Temp. Major Sir V. Nash. Temp. Capts. J. Todd, D. R. McGregor, S. W. Fisher, W. O. Arnold, M. W. Robertson, J. C. King, L. A. Moore, C. J. Gibson, W. B. Heywood, A. R. Wight, C. G. L. Wolf, C. W. Chapin, T. Woodman, A. Darlow, H. B. Brown, J. T. Hurst, C. S. Kingston, R. C. Thomas, R. Kennon, J. Fleming, E. W. Aiment, W. G. Liddiard, R. Park, M. R. Mackay, J. A. Smith, M.C., W. G. T. Hepplewhite, M.C., P. J. O'Reilly, M.C., D. K. Parkes, M. P. Scanlon, F. A. Murray, J. C. D. Simpson, C. Sand, S. Samuel (on account of ill-health contracted on active service), J. S. Stewart. Temp. Hon. Capt. H. T. Thomson (having ceased to be employed with No. 11 Stationary Hospital). Lieuts. F. H. P. Willis, J. L. Scott, J. McC. Gibson, W. E. Canter, C. Hackney, W. W. Dempster, S. Nix, A. I. Slower, V. F. Kroenig-Ryan, E. Lachopelle. Temp. Lieut. R. Dunstan. Temp. Hon. Lieut. T. J. Blackshear (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: G. H. Rossdale, A. G. Anderson, E. Chapelle, F. J. C. Johnstone, J. Ratcliffe, J. Sellar, Norman B. B. Fleming, H. D. Brown, W. M. Cameron, J. Crerar, W. Donald, G. M. Hetherington, A. R. Hill, T. J. Honeyman, J. N. Jamieson, S. Johnstone, H. E. McCall, D. B. Robertson, J. Steel, H. W. Torrance, H. S. Walker, J. E. Bannen, J. Beveridge, A. La B. Clark, R. Cunningham, J. MacA. Mackintosh, J. Stirling.

To be Lieutenants: C. S. Baxter and W. Stansfield (from Manchester University Contingent, O.T.C.).

TERRITORIAL FORCE.

Lieut.-Col. E. J. R. Evatt to be temporary Colonel whilst holding the appointment of Assistant Director of Medical Services of a Division and to remain seconded.

Lieut.-Col. C. Averill, from Assistant Director of Medical Services, to be Lieutenant-Colonel.

Major (temp. Lieut.-Col.) F. W. Burton-Fanning relinquishes his temporary rank and is restored to the establishment.

Major (temp. Lieut.-Col.) R. M. West relinquishes his temporary rank on an alteration in posting.

Officers seconded for duty with a General Hospital: Major E. S. Cunliffe, Capt. P. R. Wrigley, Capt. W. J. S. Bythell, Capt. W. A. Hooton, Capt. H. H. Rayner.

Major C. S. de Segundo, from R.A.M.C., to be Major.

Major A. C. Hartley relinquishes his commission on account of ill-health and is granted permission to retain his rank and to wear the prescribed uniform.

Major T. M. Allison is seconded for service with a General Hospital.

Capts. A. B. Whitton and S. W. Plummer to be Majors.

Capt. C. G. Strachan, from Field Ambulance, to be Captain.

Capts. J. St. A. Titmas, G. S. Haynes, M. H. Way, W. E. Alderson and K. W. Monsarrat are restored to the establishment.

Capt. R. Gill resigns his commission.

Capt. W. Rogers, from R.A.M.C., to be Captain.

Capt. A. Don to be temporary Major whilst specially employed.

Capt. H. W. Beedman, M.C., to relinquish his commission on account of ill-health.

Capt. (temp. Major) R. M. Wilson and Capt. (temp. Major) W. E. Alderson relinquish their temporary rank on alteration in posting.

Capts. J. B. F. Wilson and J. Stokes are seconded for service with a General Hospital.

Major T. E. Hill (late R.A.M.C.) to be temporary Lieutenant-Colonel, County of Durham Medical Volunteer Corps.

Lieut. R. T. Forster (late R.A.M.C.) to be temporary Captain, East Yorkshire Medical Volunteer Corps.

S. J. Yeates (late Lieutenant, R.A.M.C.) to be temporary Captain, Lancashire Medical Volunteer Corps.

Major H. P. Berry (R.A.M.C., T.F., Reserve) to be temporary Major, Lincolnshire Medical Volunteer Corps.

J. C. French (late Surgeon-Lieutenant, 2nd Durham R.G.A. Volunteers) to be temporary Captain and Medical Officer, 2nd Battalion, Durham Volunteer Regiment.

Surgeon Lieutenant-Colonel Evan Evans (late Welsh Regiment) to be temporary Captain and Medical Officer, 1st Battalion, Carmarthenshire Volunteer Regiment.

G. L. Jones (late Lieutenant, R.A.M.C.) to be temporary Captain and Medical Officer, 1st Battalion, Anglesey Volunteer Regiment.

TERRITORIAL FORCE RESERVE.

Major B. Addenbroke, from R.A.M.C., to be Major.

Capt. E. B. C. Mayrs relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. C. J. Coleman, from General Hospital, to be Captain.

Capt. J. Saffley, from Attached to Units other than Medical Units, to be Captain.

INDIAN MEDICAL SERVICE.

Capts. C. H. Reinhold, W. D. Wright, V. N. Whitamore, and W. Powell to be Majors.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 14TH.

Mortality amongst Children.

Mr. ANDERSON asked the President of the Local Government Board whether he could give the names of the insurance companies which opposed the passing of legislation to reduce the mortality among children; and, in view of the estimate of his predecessor that the lives of 52,000 children could be saved every year by such legislation, whether he intended to proceed with it in the present session.—Mr. HAYES FISHER answered: On Monday I indicated that my department has for some time been anxious to secure for local authorities in England and Wales the same powers in regard to maternity and infant-welfare work as are already possessed by local authorities in Scotland and Ireland, but that owing to opposition from insurance organisations the legislation has hitherto been delayed. The opposition to this Bill emanates from a body who have described themselves as representing the various types of Approved Societies and the Insurance Committees of England and Wales. I am not in a position to give the names of any individual insurance companies, neither do I know them.

Mr. J. H. THOMAS: Is the right honourable gentleman not aware that the majority of these societies are the trade unions and friendly societies who are anxious for the establishment of a Ministry of Health with a view to dealing with this question, and that they are experiencing difficulties from the department with which the right honourable gentleman is connected?—Mr. HAYES FISHER: No, Sir; they are experiencing no difficulty whatever from the department of which I am president. These societies are opposing this particular Bill because they desire to deal with the larger question of a Ministry of Public Health. On the other hand, my department urges that we should use the powers which we have or which we could easily have in our possession and that will not in any way prejudice the ultimate consideration of the larger question of the Ministry of Health.

Mr. THOMAS: Is the right honourable gentleman not aware that it is felt that it will prejudice it, and that trade unions and friendly societies are opposed to maternity being handed over to what are nothing more than Poor-law associations?—Mr. HAYES FISHER: It is a matter of opinion as to whether the settlement of the smaller question would prejudice the settlement of the larger question. Our opinion is that the authorities in England and Wales ought to be possessed of the same powers now possessed by the local authorities in Scotland and Ireland. If they were possessed of those powers they could make rapid and vigorous use of them, and if they could make rapid and vigorous use of them it would largely reduce the rate of mortality.

Mr. ANDERSON: Does the right honourable gentleman see any chance of agreement on this question, seeing that while this quarrel goes on 50,000 children are being killed every year?—No reply was given.

Detention of Venereal Cases.

Mr. FINNEY asked the President of the Local Government Board whether his attention had been called to a resolution passed by the Wolstanton and Burslem union, Stoke-on-Trent, stating that, taking into account the fact that the Local Government Board was now prepared to sanction in Poor-law hospitals the treatment of venereal diseases and that persons entering such institutions to undergo such treatment had the power to take their discharge before a cure had been effected, the board of guardians was strongly of opinion that the recommendations of the Royal Commission on Venereal Diseases, and that of the Royal Commission on the Poor Law and Relief of Distress, should be carried into effect—namely, that, subject to certain safeguards against abuse, the public assistance authority should have power to detain cases of venereal disease, when medically certified to be dangerous to others; and whether he would indicate the intentions of the Government respecting the same.—Mr. HAYES FISHER wrote in reply: This question has been fully considered, but it is not the present intention of the Government to introduce legislation on the subject. It is felt that compulsory detention would deter many persons from seeking treatment, and hence it would do more harm than good. It would, moreover, in my opinion, be improper to distinguish between various institutions in this matter.

THURSDAY, NOV. 15TH.

Medical Students and Military Service: Important Announcement.

Mr. DILLON asked the Minister of National Service whether his attention had been drawn to the scarcity of medical men and to the danger that the supply of medical men after the conclusion of peace might for some years be wholly insufficient; and whether, in view of this state of things, he would see that no bona-fide medical student entered before Nov. 1st, 1917, was called up for military or any other service.—Sir AUCKLAND GEDDES replied: The outlook with regard to the supply of medical men and the question of military service as it affects medical students has been under my careful review. The general policy I have adopted is to aim at maintaining a minimum output of a thousand newly qualified medical men per annum. This year no improvement can be made. In 1918 and 1919 the output will be below the desired minimum, though, I hope, approaching it. Arrangements have already been made that students serving in the Army who have completed two years of medical studies and who had begun their studies prior to August 1st, 1914, may claim to be returned to their studies. The honourable Member's suggestions will be carefully considered in connexion with the general review.

Mortality amongst Children.

Mr. ANDERSON asked the President of the Local Government Board whether he had considered the problem of infant mortality in relation to the loss of life sustained in the war; whether he was aware that the future of this country was endangered by the needless sacrifice and maiming of infant life: whether he had made representations to the War Cabinet on this question; and, if so, whether he would continue to make representations until drastic action was taken.—Mr. HAYES FISHER wrote in reply: The answer to all the four parts of the question is in the affirmative.

National Insurance and Invalided Soldiers.

Mr. CHANCELLOR asked the representative of the National Insurance Commissioners whether he was aware that the London Panel Committee, representing the medical practitioners engaged in insurance practice in the metropolitan area, had advised their constituents to refuse to carry out the new regulations *re* invalided seamen, marines, and soldiers, issued by the Commissioners; and whether he could state the number of doctors who had notified the London Insurance Committee to this effect.—Sir E. CORNWALL wrote in reply: Since the date referred to in the question the London Panel Committee have been in communication with the Commissioners with a view to the elucidation of various points in connexion with the new regulations, and it is not, therefore, possible to know what course individual doctors in London may decide to adopt in regard to the matter referred to in the question.

MONDAY, NOV. 19TH.

Departmental Committee on the Blind.

Mr. ACLAND ALLEN asked the President of the Local Government Board whether any decision had been come to by the Cabinet as to carrying into effect the main recommendations of the Departmental Committee on the Blind (see THE LANCET, Oct. 27th, 1917, p. 654).—Mr. HAYES FISHER replied: Yes. The War Cabinet have decided to authorise the setting up of special departments in the Local Government Board and in the Local Government Board for Scotland respectively, and the establishment of an advisory committee for England and Wales and a separate advisory committee for Scotland.

TUESDAY, NOV. 20TH.

Medical Fees and the Coroners Act.

Mr. INGLEBY asked the Home Secretary whether he was aware that, in cases where a patient was brought into hospital in a moribund condition and a post-mortem examination had to be made and an inquest held, the medical officer who undertook the post-mortem and subsequently attended the inquest to give evidence was precluded by Section 2, Clause 22, of Part II. of the Coroners Act, 1887, from receiving any fee, whereas if the patient was dead before being received into hospital the medical officer was, under Section 1, entitled to receive £2 2*s.* for his services; whether he was aware that coroners had from time to time expressed their opinion in court of the injustice suffered by the medical profession in this matter; and whether he would introduce a short Bill repealing Section 2 of the Act above referred to.—Sir G. CAVE answered: The facts are as stated in the question, but I do not see my way to propose legislation on this subject at present.

URBAN VITAL STATISTICS.

(Week ended Nov. 17th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 12·2, against 12·6 and 11·8 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·5 per 1000, and was equal to that recorded in the previous week; among the remaining towns the rates ranged from 5·2 in Swindon, 6·6 in Wimbledon, and 7·0 in Enfield, to 17·6 in Aberdare, 18·9 in Lincoln, and 20·9 in Hastings. The principal epidemic diseases caused 295 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 95 from measles, 83 from infantile diarrhœa, 69 from diphtheria, 38 from whooping

cough, 9 from scarlet fever, and 1 from enteric fever. The deaths from measles, which had been 33, 56, and 70 in the three preceding weeks, further rose to 95, and caused the highest annual rates of 2·7 in Acton, 2·8 in Preston, 3·1 in Hastings and in Aberdare, and 4·6 in Stockton-on-Tees. The 1261 cases of scarlet fever and the 1487 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 75 and 18 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns 148 resulted from violence. The causes of 23 deaths were uncertified, of which 5 were registered in Birmingham and 3 each in Leicester and Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·9 per 1000 and was equal to that recorded in the previous week. The 243 deaths in Glasgow corresponded to an annual rate of 11·4 per 1000, and included 3 each from whooping-cough and diphtheria, 2 from measles, and 1 from infantile diarrhœa. The 70 deaths in Edinburgh were equal to a rate of 11·0 per 1000, and included 3 from scarlet fever and 1 from diphtheria.

Irish Towns.—The 129 deaths in Dublin corresponded to an annual rate of 16·9, or 2·0 per 1000 less than that recorded in the previous week, and included 6 from infantile diarrhœa and 1 each from enteric fever and measles. The 90 deaths in Belfast were equal to a rate of 11·9 per 1000, and included 1 death each from measles, whooping-cough, and infantile diarrhœa.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon. Salary £175 per annum, with board, &c.

BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary 8 guineas per week.

BRISTOL ROYAL INFIRMARY.—**House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.**

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Resident House Surgeon. Also Assistant House Surgeon.

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.—Resident House Physician for six months. Salary at rate of £200 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

ILFORD URBAN DISTRICT COUNCIL.—Temporary Medical Officer of Health. Salary at rate of £550 per annum.

KENSINGTON DISPENSARY AND CHILDREN'S HOSPITAL, 49, Church-street, Kensington.—Resident Medical Officer. Salary as arranged, with board, &c.

KENT EDUCATION COMMITTEE.—Temporary School Medical Inspector and Medical Officer of School Clinic. Salary at rate of £385 per annum.

LEICESTER ISOLATION HOSPITAL AND SANATORIUM, Groby-road.—Second Resident Medical Officer. Salary at rate of £300 per annum, with board, &c.

MANCHESTER, CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £400 per annum.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female House Physician, Obstetric Assistant, Two House Surgeons, all for six months. Salary at rate of £50 per annum, with board, &c. Also Resident Medical Officer at House of Recovery, New Barnet, for six months. Salary at rate of £60 per annum. Also Clinical Assistants and Anæsthetists.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary £100 per annum, with board, &c.

RECUPERATIVE HOSTELS (FOR SAILORS AND SOLDIERS INVALIDED FROM H.M. SERVICES WITH NERVE-STRAIN), 43-45, Fitzjohn's-avenue, N.W.—Honorary Neurologist and Honorary Laryngologist. Also Resident Medical Officer. Salary £400 per annum.

STOKE-ON-TRENT, COUNTY BOROUGH TUBERCULOSIS SANATORIUM.—Resident Assistant Medical Officer. Salary £250 per annum, with board, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.

WARWICKSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary £325 per annum.

WESTERN SKIN HOSPITAL, 44, Hampstead-road, London, N.W.—Vacancy on Honorary Medical Staff.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Coventry, in the county of Warwick.

Births, Marriages, and Deaths.

BIRTHS.

BARFF.—On Tuesday, Nov. 13th, at Rhosneigr, Anglesey, the wife of Lieut. G. P. Barff, R.A.M.C.—a daughter.

BLAKE.—On Nov. 17th, at Cambridge House, Portsmouth, the wife of Philip Blake, L.D.S. Eng., of a son.

LEECH.—On Nov. 18th, at High Elms Nursing Home, Manchester, Mary (*née* Walder), the wife of Captain E. B. Leech, R.A.M.C., of a daughter.

LUNN.—On Saturday, Nov. 17th, at Château de Crans, Dora (*née* van Berchem), the wife of Captain (temp. Lieut.-Col.) Lunn, M.C., R.A.M.C., of a son.

MOORE.—On Nov. 10th, at Mundens, Malmesbury, the wife of Reginald M. Moore, M.A., M.B., B.C., of a son.

SHINNIE.—On Nov. 13th, at Woodstock-avenue, Golders Green, N.W., the wife of Andrew J. Shinnie, M.D., D.P.H., of a daughter.

MARRIAGES.

BOLDERO—DUNN.—On Nov. 15th, at St. Peter's Church, Cranley-gardens, S.W., Captain Harold E. A. Boldero, R.A.M.C., to Marjorie Dunn, eldest daughter of Mrs. Arthur Dunn, Elm Park-gardens, S.W., and the late Arthur T. B. Dunn, of Ludgrove.

FOTHERINGHAM—BEATTIE.—On Nov. 14th, at St. Columba's, Pont-street, Captain James Bryan Fotheringham, R.A.M.C., to Mary, fourth daughter of Mr. and Mrs. James Beattie, of Canmore, St. Andrews, and Buckingham-street, Buckingham-gate, S.W.

NEIL—SHARP.—On Nov. 19th, at the Parish Church, Bradford, Hugh Loudon Neil, Captain, R.A.M.C., T.C., to Annette Olivia, second daughter of Mr. and Mrs. Thomas P. McKie Sharp, of St. Albans.

RAWLING—LEAKE.—On Wednesday, Nov. 14th, at St. Mary's, West Winch, King's Lynn, Major Louis Bathe Rawling, F.R.C.S., R.A.M.C., T.F., to Emily Winifried, youngest daughter of Mr. and Mrs. H. A. Leake, of West Winch, King's Lynn.

WEAKLEY—RUFFER.—On Nov. 6th, at H.B.M. Consulate and St. Mark's Church, Alexandria, Arthur Leonard Weakley, Captain, R.A.M.C., to Honora Vere, second daughter of the late Sir Armand Ruffer, M.D., C.M.G., &c., and Lady Ruffer, of Ramleh, Egypt.

WINTER—KEWLEY.—On Nov. 15th, at the Wesleyan Church, Tipton, Captain A. G. Winter, R.A.M.C., to Alice H. Kewley.

DEATHS.

ANDERSON.—On Nov. 11th, at "Limehurst," Preston, Lancashire, Joseph Anderson, M.B., C.M.

BARNARD.—On Nov. 14th, at Boston, Lincs., of acute pneumonia, Annie Thompson Barnard, M.D., B.S. Lond., D.P.H. Camb., youngest daughter of the late William Barnard, of Harlow, Essex.

BROWN.—On Nov. 15th, at Southernhay East, Exeter, George Brown, M.R.C.S. Eng., aged 72.

BURD.—On Nov. 15th, at Newport House, Shrewsbury, Edward Burd, M.D. Cantab., Consulting Physician to the Salop Infirmary, aged 91.

FOX-RUSSELL.—On Nov. 6th, killed in action, Captain John Fox-Russell, M.C., R.A.M.C.

JONES.—On Friday, Nov. 16th, at East Meon, from cardiac failure, Josephine, beloved wife of Captain Edward T. Jones, R.A.M.C.

MACGREGOR.—On Nov. 15th, at Rose Cottage, Oswaldkirk, Malton, aged 62, Peter MacGregor, F.R.C.S. Ed., J.P., of Rashcliffe, Huddersfield.

PHILLIPS.—On Nov. 6th, killed in action, Captain Edwin Phillips, R.A.M.C.

RANSOME.—On Nov. 14th, at Queen Mary's Military Hospital, Whalley, Lancashire, Herbert Fullarton Ransome, Lieut., R.A.M.C.

SAWYER.—On Nov. 19th, at Bath, Ramon Alexander Sawyer, M.R.C.S., in his 54th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 6.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

Notes, Short Comments, and Answers to Correspondents.

A CURIOUS ACTION OF MERCURY ON ALUMINIUM.

To the Editor of THE LANCET.

SIR,—I shall be much obliged if you can give me any information explanatory of the following. The other day when making some liq. hyd. perchlor. I used an aluminium spatula in transferring the dry salt to the scale-pan, and also, by chance, an aluminium funnel in introducing it into the bottle. About an hour later I found the funnel choked with a white powdery substance, but washed it out without paying much attention. The next day I noticed on the end of the spatula, which had been laid down unwashed, an extraordinary *growth*, there is no other word for it, of white fibrous-looking substance. There were strands of it 3 to 4 inches long and ¼ inch thick, curling about the end of the spatula, and looking like the white ash of pieces of burnt string. The substance was extremely light, a breath blowing it away, and the cloud of fine powdery fumes resulting was distinctly irritating to the throat, and, I thought, produced some headache and nausea. Subsequent experiment showed that the minutest particle of dry $HgCl_2$, the finest dust of it, if placed on a surface of aluminium, produces in a few minutes a growth of this fine fibrous-looking, ash-like substance. So rapid is the growth that the movement is distinctly visible, and within half an hour a pillar 2 or 3 inches long projects, curving into all sorts of queer shapes if unsupported. It reminded me of the "serpent egg" pills of my boyhood, which, when ignited on a saucer, projected a curling ash representing a serpent. The surface of aluminium is rapidly corroded away in the process. I presume that an aluminate of mercury is formed in this reaction, but I can find no mention of it in books that I have, and an old and experienced dispensing chemist to whom I showed the experiment was equally unfamiliar with it.

Aluminium is so much used nowadays that it seems to me to be worth knowing that the slightest dust of corrosive sublimate on its surface produces this rapidly growing mass of powdery substance, which, at any rate in my case, was irritating and noxious. I produced a really extraordinary growth by dusting over an aluminium medicine cup with the powder and standing it under a glass case for 48 hours.

I am, Sir, yours faithfully,

Bromsgrove, Nov. 2nd, 1917. H. CAMERON KIDD.

*** Our consulting chemist has confirmed these interesting observations; the phenomenon is remarkable, and is correctly described in detail by Dr. Cameron Kidd. We note, however, that this peculiar reaction is described in some of the modern text-books on chemistry. Thus in "Inorganic Chemistry," by F. S. Kipping and W. H. Perkin (London: W. and R. Chambers), the following paragraph on aluminium amalgam appears (p. 612): "When a little mercury is placed on a bright sheet of aluminium and well rubbed on the sheet with a damp rag, the aluminium becomes coated with a thin film of mercury. By breathing on the sheet, and thus forming a film of moisture, a chemical action is set up; the aluminium dissolved in the mercury decomposes the water, giving aluminium hydroxide which rises as a bulky white powder from the surface of the metal." This seems to us to be the phenomenon described by our correspondent.—ED. L.

AN ARTISTIC ALMANAC FOR 1918.

Messrs. Abdulla and Co. have published an almanac from the sale of which it is hoped that at least £1000 will be realised for the funds of the British Red Cross Society. On each of 12 sheets is a monthly calendar and a picture representing some British sport typical of the month. The contributing artists in black and white are Mr. Maurice Greiffenhagen, A.R.A., Mr. W. Hatherell, R.I., Mr. Fred Leist, R.B.A., Mr. Frank Reynolds, R.I., Mr. Harry Rountree, and Mr. Joseph Simpson, R.B.A. The artists in colours are Mr. Christopher Clark, R.I., Mr. Lionel Edwards, A.R.C.A., Mr. Frank Gillett, R.I., Mr. Gilbert Holiday, Mr. C. M. Padday, and Mr. Bernard Partridge. Copies of the almanac may be obtained from any tobacconist, or post free from Messrs. Abdulla and Co., 173, New Bond-street, W.1, price 1*s.* 4*d.*

DRUG HABITUÉS IN NEW YORK.

A RECENT weekly bulletin of the Department of Health, City of New York, gives reasons for believing that the number of drug habitués in the city runs into thousands. Years ago the chief habit-forming drug in use was opium and its derivative morphine. Subsequently cocaine was extensively used, so much so, in fact, that the words *coke*, *happy dust*, and *sniffing* came into common use. In recent years, however, a change has taken place and cocaine is at present little used by the drug habitués. Whether this is due to the legal restrictions on the sale of cocaine or to a change in taste on the part of the habitués, cannot be determined. Over 90 per cent. of the drug habitués now make use of heroin, mostly hypodermically, but frequently also by snuffing. The Department of Health provides under the new State Narcotic Law for the commitment to an institution until "sufficiently treated" of any person voluntarily applying for treatment for drug addiction. During the first month after the announcement was made the number of applicants was 62, of whom 54 were men and 8 women.

A Medical Student (*Canada*) is advised to consult one of his teachers, to whom, in case of difficulty, we shall be glad to lend any assistance in our power.

C. E. W.—Fees are not paid in the circumstances mentioned to medical officers of institutions, although the fairness of this proceeding has often been questioned. It would not be advisable, if a similar case should arise, to refuse to give evidence, at any rate unless the authorities of the institution are prepared to endorse such a course.

C. E. S.—Officers of the Royal Army Medical Corps and civilian practitioners in military employment are forbidden by the Army Council to give certificates prejudging the fitness or unfitness of men for military service, but they may supply their patients with statements describing their physical condition or medical history for the information of the medical boards.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 27th.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.

Short Papers:

On the Manifestations of Serum Disease which may follow Intrathecal Injections.

Friday, Nov. 30th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, Major Greenwood): at 5 P.M.

Paper:

Surg.-Colonel V. Soubbotitch (of the Serbian Army): A Pandemic of Exanthematous Typhus in Serbia in 1914 and 1915.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones:—

MONDAY.—5 P.M., Lecture II.:—Prof. A. Keith: The Principles and Practice of John Hilton.

WEDNESDAY.—5 P.M., Lecture III.:—Prof. A. Keith: The Principles and Practice of H. O. Thomas.

FRIDAY.—5 P.M., Lecture IV.:—Prof. A. Keith: The Methods applied by G. F. Stromeyer, W. Adams, and J. Wolff.

The Lectures will be illustrated by specimens from the Army Medical Collection now on exhibition in the Museum and also by specimens from the College Collection.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella.

TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Special Demonstration:—Dr. A. J. Whiting: Selected Medical Cases, Auricular Flutter.

WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr.

A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

THURSDAY.—2.30. P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. E. Giles. 3.30 P.M., Medical Inpatients: Dr. R. M. Leslie.

FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

SATURDAY.—2.30 P.M., Surgical Operations Mr. H. W. Carson.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 21st, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 15	...	49	47	38	40	41	Overcast
,, 16	...	53	49	39	39	40	Overcast
,, 17	...	50	45	38	38	38	Foggy
,, 18	...	51	49	39	44	46	Overcast
,, 19	...	55	52	44	44	45	Overcast
,, 20	...	67	57	45	51	51	Cloudy
,, 21	0·06	70	59	50	56	56	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

BOOKS, ETC., RECEIVED.

KING, P. S., AND SON, London.
Instead of the Tavern. By J. W. H. Theobald and A. F. Harvey. 1*s.* net.

PRIVATELY PRINTED, New York.
Letters Concerning the War between an American and a Relative in Germany.

G. P. PUTNAM'S SONS, London and New York.
A Text-book of War Nursing. By Violette Thurstan. 3*s.* 6*d.*

UNIVERSITY OF LONDON PRESS, LIMITED, London.
University of London Calendar, 1917–1918. 6*s.* net.
Regulations for External Students, September, 1917. 1*s.* 6*d.* net.

UNWIN, T. FISHER, London.
The Road to a Healthy Old Age. By T. Bodley Scott, M.R.C.S. Eng., L.R.C.P. Ed. 4*s.* 6*d.* net.

WILLIAMS AND NORGATE, London.
Koktopräzipitinogene und Koktoimmunogene. Von Dr. R. Torikata. 21*s.* 6*d.* net.

Communications, Letters, &c., have been received from—

A.—Capt. W. Appleyard, R.A.M.C.; Messrs. Arnold and Sons, Lond.; Anglo-French Drug Co., Lond.; Messrs. Armour and Co., Lond.; Prof. Sir Harry Allen, Melbourne; Capt. J. L. Aymard; Prof. F. W. Andrewes, Lond.; Lieut.-Col. J. G. Adami, A.D.M.S.; Mr. H. W. Abbott, Lond.; Dr. M. Atal, Lond.; Admiralty Medical Dept., Director-General of; Sir Robert Armstrong-Jones, Lond.; Messrs. Allen and Hanburys, Lond.

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I.—Mr. Inman, Sheffield; Inspector-General of the Insane, Sydney; Dr. S. T. Irwin, Belfast; *The Illustrated London News* and *Sketch*.

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Y.—Mr. P. Yates, Manchester; Sir Arthur Yapp, Lond.; *Yorkshire Evening News*, London, Sub-Editor of.

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[See also page 25

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MIST. DAMIANÆ CO. (Hewlett's) will be found to possess all the properties of Damiana, viz :—Its alterative effects on the alimentary canal and tonic action upon the brain and nervous system generally. It is a well-known fact that exhaustion of the organs and tissues, neurasthenia, and premature decay, are far more prevalent at the present day than ever before. The causes are numerous and complex, but, perhaps, the principal reason is that multitudes have to toil harder with their brains than any previous race. The resulting cerebral anæmia is, therefore, one of the most general complaints in modern life. Not only is it found amongst the professional literary men, but busy merchants and overworked scholars are equally the subjects of enfeebled nerve power and deficient vitality.

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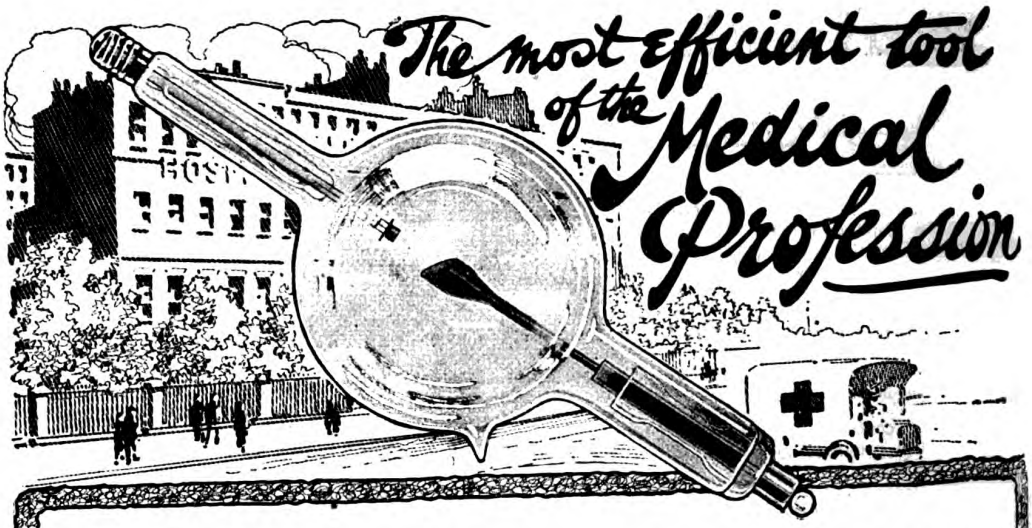
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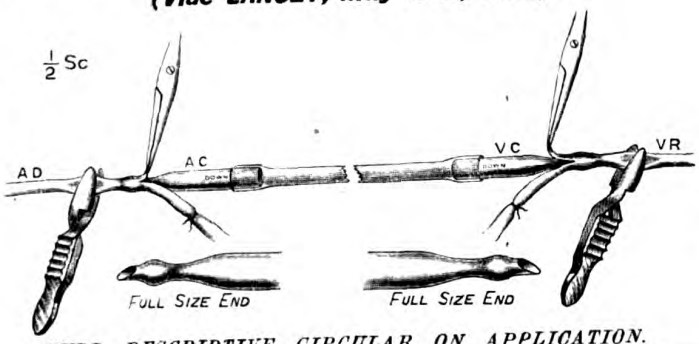
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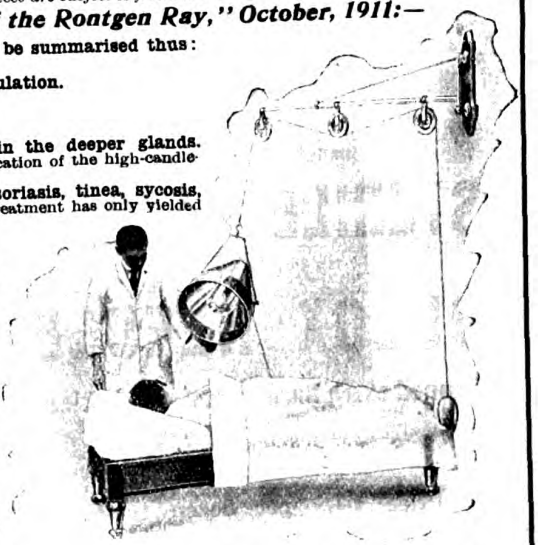
In the treatment of some skin diseases, notably acne, eczema, psoriasis, tinea, sycosis, syphilitic and other ulcers, I have found this succeed where other treatment has only yielded disappointing results.

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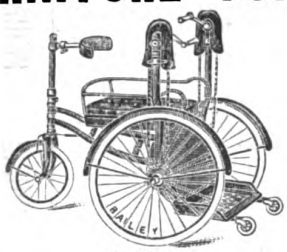
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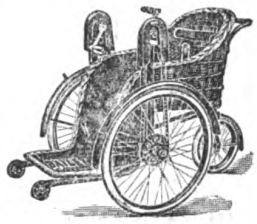
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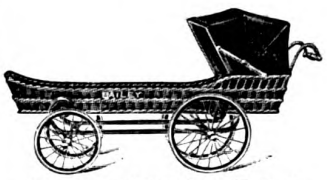
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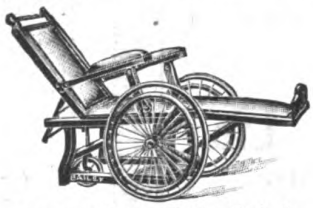


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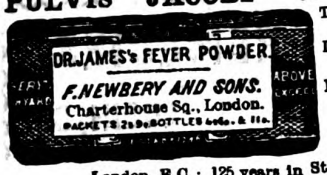
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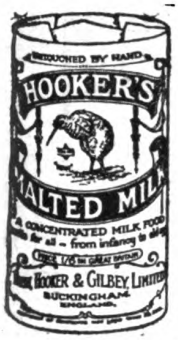
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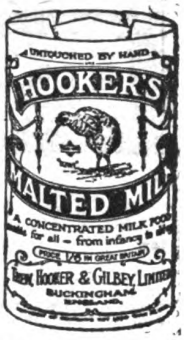
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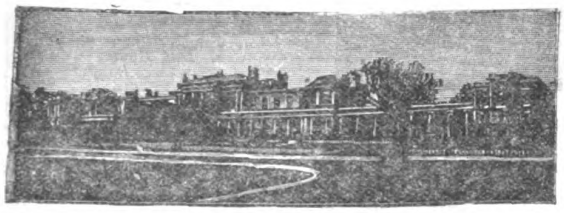
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A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms.

Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.
Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.
MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.
Other days by appointment.

Visiting and Consulting Physicians { Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

NORTHUMBERLAND HOUSE,

Telegrams: "SUBSIDIARY, LONDON."

GREEN LANES, FINSBURY PARK, N.

(Established 1814.)

Telephone: No. 888, North.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

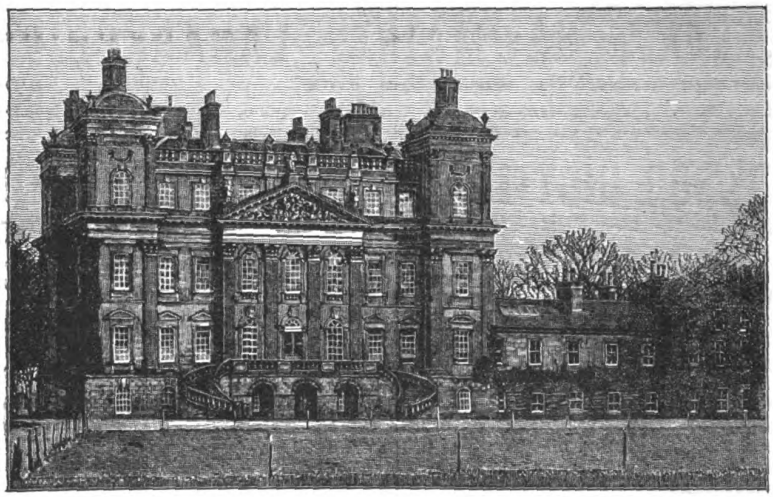
CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1067.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.
Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.



DUFF HOUSE, BANFF, SCOTLAND.

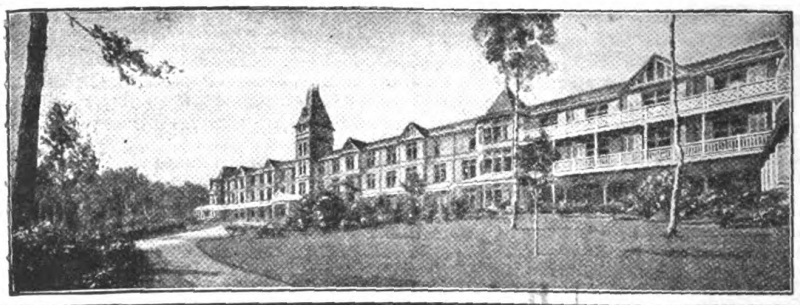
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3 guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales

MATLOCK SANATORIUM

Situated on the edge of the mountain limestone area of Derbyshire, over 700 feet above sea-level. The buildings face south and command beautiful views, while on the north and east they are sheltered by lofty hills. The surrounding country is well known for its great beauty and interest. The climate is dry and bracing. The buildings are lighted by electricity and heated by radiators.

Treatment is carried out on modern lines, all special methods being available in suitable cases. A new X-ray apparatus has been installed, and there is a complete equipment for the carrying out of up-to date methods in all Tubercular and other Pulmonary cases.

For particulars apply to FREDERICK KINCAID, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire. Telephone and Telegraph: SANATORIUM, MATLOCK 22.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: "Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT. A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 307

BETHEL HOSPITAL FOR MENTAL DISEASES,

Established 1713.] **Norwich.** ['Phone: 330 Norwich.

An endowed Hospital for the reception of PRIVATE PATIENTS of both sexes. Voluntary Boarders admitted without certificates. Terms from 35s per week. Full particulars on application to the MEDICAL SUPERINTENDENT.

ST. GEORGE'S RETREAT,

BURGESS HILL, SUSSEX.

An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. New Marine Brighton Residence for change. Voluntary Boarders taken.
Resident and Visiting Medical Officers. London 1¼ hours.
For terms, &c., apply to the Superioress.
Telephone: Post Office 90 x. Telegrams: "Wivelsfield Green."

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.
Associated Rooms, Private Rooms, or Suites. Very moderate terms.
Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.
Telephone: 494 Brixton.

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at COLTHURST HOUSE SCHOOL.

Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received.
Terms from 4½ gns. weekly.
Apply, Medical Officer, or Mrs. Peele.

Home for young Gentleman of simple mind or requiring supervision. Good home in Country.—T. A. Harrison, Hill Crest, Yarningale, Claverdon, Warwickshire.

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtsfold," Haslemere, Surrey. Telephone: 22 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Kent Education Committee.—The Committee invite applications for the appointment of a Temporary SCHOOL MEDICAL INSPECTOR and MEDICAL OFFICER of SCHOOL CLINIC, to act under the supervision of the School Medical Officer. The appointment is open to Lady doctors and to medical men ineligible for Military Service.

The selected candidate will be required to devote his or her whole time to the duties of the office.

The salary offered is at the rate of £385 per annum, together with travelling and subsistence allowances.

Applications, stating age and full qualifications, and accompanied by copies of three recent testimonials, must be forwarded to the undersigned, to arrive not later than December 6th, 1917.

No official form of application will be issued and canvassing will be considered a disqualification.

ALFRED GREENWOOD, M.D., School Medical Officer.

Sessions House, Maidstone, November 20th, 1917.

Ilford Urban District Council.—Appointment of TEMPORARY MEDICAL OFFICER OF HEALTH.—The Urban District Council of Ilford invites applications from properly qualified Medical Men, with the Diploma of Public Health or similar qualification, for the office of Temporary Medical Officer of Health, Temporary School Medical Officer, and Temporary Medical Superintendent of the Isolation Hospital and Sanatorium during the absence of the Medical Officer of Health on Military Service. Salary will be at the rate of £550 per annum.

The person appointed will be required to devote his whole time to the duties of the office and to reside within the Urban District of Ilford.

Candidates must be ineligible for Military or Naval Service.

The appointment will be subject to one month's notice on either side.

Applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials (which will not be returned), endorsed "Temporary Medical Officer of Health," must be sent in at once to the undersigned.

Canvassing members of the Council, directly or indirectly, is prohibited and will disqualify. By order,

ADAM PARTINGTON, Clerk and Solicitor to the Council.

Town Hall, Ilford, 21st November, 1917.

Resident House Physician.—Applications are invited for this post. Salary at the rate of £200 per annum, with the usual allowances. The appointment will be made for six months. Selected candidates will be communicated with. Apply, with copies of three recent testimonials, not later than November 27th, 1917, to the Secretary, HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. 3.

Derbyshire Royal Infirmary, Derby.—There is a vacancy for a HOUSE SURGEON.

Candidates must be qualified and registered under the Medical Acts.

Salary £200 per annum, with board, residence, &c.

Male applicants should be ineligible for Military Service.

The Hospital contains 367 beds, of which 170 are reserved for Soldiers.

By order.

12th November, 1917. EDMUND FORSTER, Superintendent.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. — HOUSE SURGEON 1st January.

Six months' appointment. Salary £100 per annum, with board, residence, and washing.

Candidates should be doubly qualified, but applications from Fifth-year Students will be entertained. T. GLENTON-KERR, Secretary.

12th Nov., 1917. Telephone: Dalston 305.

Royal Victoria and West Hants HOSPITAL, Bournemouth, Boscombe Branch (including 220 beds for Sick and Wounded Soldiers).—HOUSE SURGEON required, to commence duty at once. Salary £175, with board, lodging, and washing. Candidates must be ineligible for H.M. Service.

Applications stating age and nationality, with recent testimonials, to be sent at once to the undersigned.

Application from Fifth-year Students will be considered.

November 19th, 1917. GORDON M. SAUL, Secretary.

Recuperative Hostels (for Sailors and SOLDIERS INVALIDED from H.M. SERVICES with NERVE-STRAIN), 43-45, Fitzjohn's Avenue, N.W. 3.—Wanted,

HON. NEUROLOGIST,
HON. LARYNGOLOGIST.

Also RESIDENT MEDICAL OFFICER, at a salary of £400 per annum, preference being given to applicants who have been invalided from the Services.

Applications to be addressed to The Secretary, The Hostel, 45, Fitzjohn's-avenue, Hampstead, N.W. 3.

Hospital for Consumption and DISEASES of the CHEST, Brompton, S.W. 3.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN. Applicants must be ineligible for Military Service. The duties include work in the Out-patient Department as well as in the wards. Further particulars may be obtained from the undersigned, to whom applications, with testimonials, should be addressed. The appointment is for six months, with an honorarium of 30 guineas.

November, 1917. FREDERICK WOOD, Secretary.

New Hospital for Women, Euston-road.—Wanted, Medical Women for the following posts:—

HOUSE PHYSICIAN, OBSTETRIC ASSISTANT, TWO HOUSE SURGEONS (board, residence, laundry, and salary at the rate of £50 per annum).

RESIDENT MEDICAL OFFICER, House of Recovery, New Barnet (salary at the rate of £60 per annum).

These appointments from 1st January, 1918, for six months.

Medical Women are also required as CLINICAL ASSISTANTS and ANÆSTHETISTS. Particulars on application.

Applications, with testimonials, should be sent in by 28th November.

IMOGEN H. MURPHY, Secretary.

Warwickshire County Council.—ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.—Applications are invited for the post of Assistant County Medical Officer of Health (Male or Female). The duties of this officer include Medical Inspection of School Children. Salary £325, with travelling expenses. The officer must be prepared to devote his whole time to the service of the County.

Statement of the duties and forms of application may be obtained from A. BOSTOCK HILL, M.Sc., M.D.,
County Medical Officer of Health.

16, Northgate-street, Warwick, November 13th, 1917.

Corporation of Leicester.—Resident MEDICAL OFFICER.—Second Resident Medical Officer (Male or Female) required for the ISOLATION HOSPITAL and SANATORIUM, Groby-road.

Commencing salary at the rate of £300 a year, with board, residence, and washing.

The Institution provides accommodation for 350 beds and the diseases treated include, besides tuberculosis, scarlet fever, diphtheria, enteric fever, measles, cerebro-spinal fever, and erysipelas. 130 beds are reserved for sick and wounded soldiers.

Applications, stating qualifications, age, and experience, whether married or single, and accompanied by copies of testimonials, to be sent to the undersigned as soon as possible.

C. KILLICK MILLARD, M.D., D.Sc.,
Town Hall, Leicester. Medical Superintendent and M.O.H.

City of Bradford.—Applications are invited for the position of Temporary ASSISTANT SCHOOL MEDICAL OFFICER. Salary 8 guineas per week. Apply, Medical Officer of Health, Town Hall, Bradford.

There is a vacancy on the Honorary Medical Staff of the WESTERN SKIN HOSPITAL, 44, Hamstead-road, London, N.W. 1. Applications, by letter, to the Secretary on or before 29th November.

Kensington Dispensary and Children's HOSPITAL (11 cots).—RESIDENT MEDICAL OFFICER required. Medical Practitioners are invited to send testimonials of qualification (not more than three) by December 1st, to the Hon. Secretary, 49, Church-street, Kensington. Board, apartments, and laundry provided, and salary as arranged.

Dumfries and Galloway Royal Infirmary.—Wanted, a fully qualified RESIDENT HOUSE SURGEON, also an ASSISTANT HOUSE SURGEON (Male or Female), to commence duties at the end of the current year. Apply, giving full particulars with testimonials, and stating essential particulars, to Mr. J. SYMONS, Treasurer, 84, Irish-street, Dumfries, on or before 10th December, 1917.

City of Manchester Education Committee.—ASSISTANT SCHOOL MEDICAL OFFICER (Temporary Appointment).—Applications are invited for the post of Assistant School Medical Officer. Salary £400 per annum, with £10 allowance yearly for travelling expenses. The appointment is for the duration of the war, and terminable by three months notice.

Applicants should state if they have had experience in the X-ray treatment of Ringworm and in the correction of errors of Refraction.

Applications to be sent in by December 8th, and addressed to
SPURLEY HEY, Director of Education.
Education Offices, Deansgate, Manchester, November 20th, 1917.

The Victoria Hospital for Children, Tite-street, Chelsea, S.W. (104 beds).—The Committee invite applications for the post of HOUSE PHYSICIAN, vacant on January 1st, 1918. Open to qualified Men (ineligible for Military Service) or Women.

Candidates for the post must hold Medical and Surgical qualifications, and be registered under the Medical Act. Salary £200 per annum, with board, lodging, and washing.

Applications, with not less than three copies of recent testimonials, should be sent to the Secretary on or before December 17th.

By order.
H. G. EVERED, Secretary.

County Borough of Stoke-on-Trent.—TUBERCULOSIS SANATORIUM.—RESIDENT ASSISTANT MEDICAL OFFICER.—The Town Council invite applications from qualified ladies or gentlemen (the latter to be ineligible for Military Service) for the position of Resident Assistant Medical Officer at the Stanfield Tuberculosis Sanatorium. Salary £250 per annum, with board and residence provided. The person appointed will be required to act under the directions of the Tuberculosis Officer, and assist him generally.

Applications, stating age, qualifications, and experience, accompanied by copies of not more than three recent testimonials, and endorsed "Resident Assistant Medical Officer," should be delivered to the undersigned not later than 10 A.M. Thursday, 6th December, 1917.

E. B. SHARPLEY, Town Clerk.
Town Hall, Stoke-on-Trent, 20th November, 1917.

St. John V.A.D. Hospital, Hull (400 Military and Naval Beds).—Lady who has had previous experience as Matron in hospital where Military patients have been treated, required as MATRON early in the New Year.

All applications should be sent to the Commandant, St. John V.A.D. Hospital, Cottingham-road, Hull.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Assistant wanted. Small Private Sanatorium. Light duties. Salary £200 per annum. Apply, Medical Superintendent, Sanatorium, Chagford, Devon.

Locum Tenens Provided
at ONE Hour's Notice.
APPLY
ARNOLD & SONS
(J. E. ARNOLD, E. R. ARNOLD),
Surgical Instrument Manufacturers,
TRANSFER DEPARTMENT,
8, GILTSPUR STREET, LONDON, E.C. 1.
Telegrams: "Instruments, London." Telephone: 5240 City.

Locum Tenens.—No fee to Principals.—Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application.—Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

M.B. (Edin.) open for Temporary ASSISTANTSHIP, &c. Good recent references. Age forty-eight.—Address, No. 550, THE LANCET Office, 423, Strand, W.C. 2.

Tuberculosis Officer, over military age, desires permanent appointment in the South of England.—Address, No. 544, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens will engage for duration of War or other reasonably long period. Experienced in all branches of general practice. Thoroughly reliable.—Address, Dr. B., Thursley-road, Elstead, Godalming, Surrey.

Locum Tenency required. Short or long period. M.R.C.S., L.R.C.P. Forty-eight. Total abstainer.—Apply, L., Thaxted, Essex.

University and Conjoint Man, age 30, at liberty for one month, requires LOCUMCY. Town or Country.—Address, No. 539, THE LANCET Office, 423, Strand, W.C. 2.

Exchange.—M.O. i/c Home Defence Squadron, R.F.C. (Norfolk), willing to Exchange with M.O. i/c Base in Flanders.—Address, No. 542, THE LANCET Office, 423, Strand, W.C. 2.

An Ophthalmic Surgeon wishes to hear of some Appointment in Town, preferably where some operative work can be had. Whole-time work impossible.—Address, No. 549, THE LANCET Office, 423, Strand, W.C. 2.

Final-year Medical Student desires a locum as ASSISTANT with a Doctor or in a Hospital for three weeks from December 15th. Good references.—Address, No. 547, THE LANCET Office, 423, Strand, W.C. 2.

Unqualified Man of experience required in working-class Practice in London as SURGERY ATTENDANT and DISPENSER. Work very light. Married or single; no children. Good pay.—Address, No. 548, THE LANCET Office, 423, Strand, W.C. 2.

Lady Dispenser desires post in Institution, in or near London preferred. Ten years' thorough experience in private work and as head dispenser in military hospital. Excellent testimonials.—Address, No. 545, THE LANCET Office, 423, Strand, W.C. 2.

Lady would like to go as Assistant in X-Ray work. Whole or part time. Trained. Certificates for X-Ray and Electrical Treatments, First Aid, and Home Nursing.—Address, No. 546, THE LANCET Office, 423, Strand, W.C. 2.

Secretary-Attendant.—Well-educated Lady, speaks French, age twenty-seven, seeks post.—Address, No. 541, THE LANCET Office, 423, Strand, W.C. 2.

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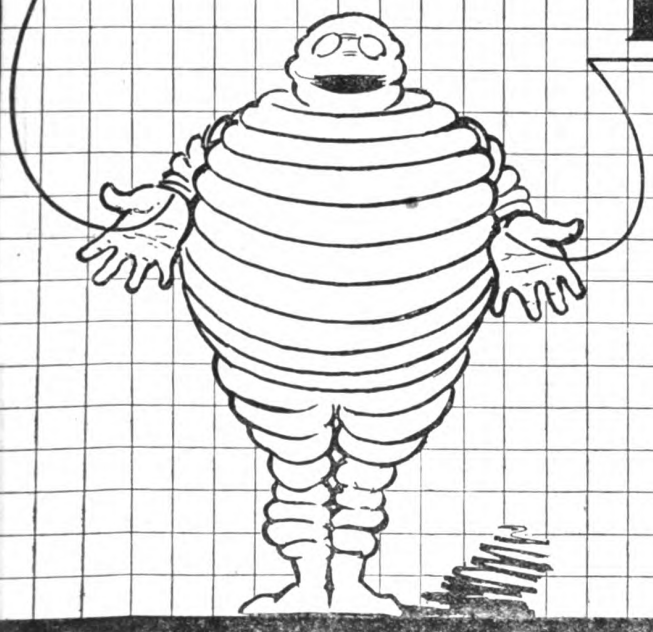
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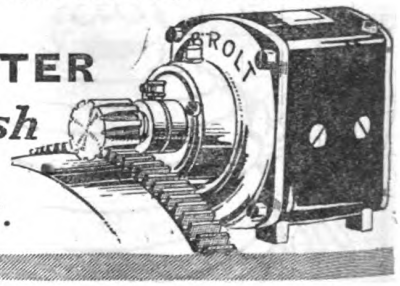
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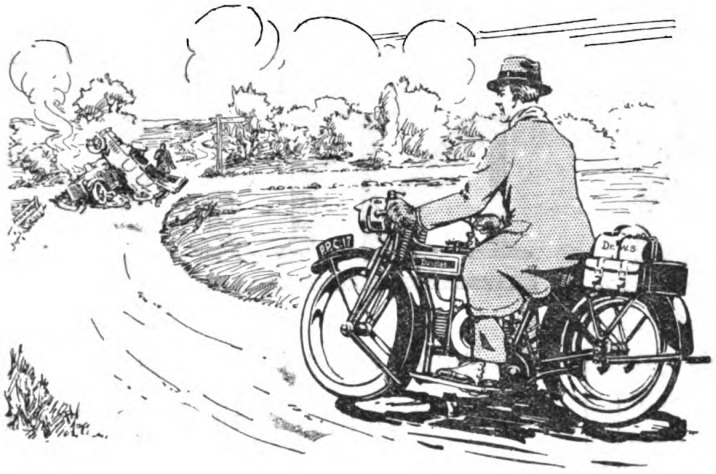
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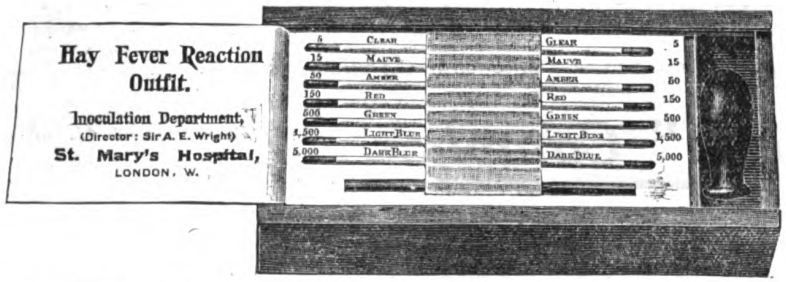
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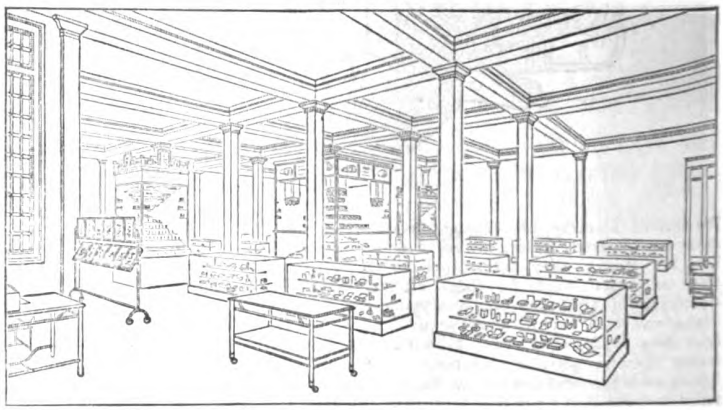
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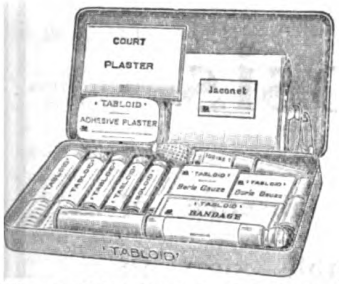


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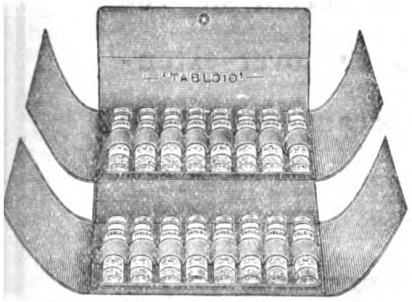
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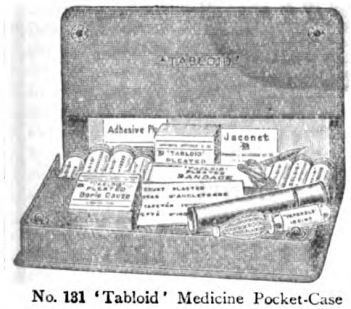
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Hunterian Lecture

ON THE

SURGICAL COMPLICATIONS OF TYPHOID AND PARATYPHOID FEVERS.*

Delivered before the Royal College of Surgeons of England on March 5th, 1917,

BY A. E. WEBB-JOHNSON, M.B., CH.B. MANCH., F.R.C.S. ENG., D.S.O.,

LIEUTENANT-COLONEL, R.A.M.C. (T.C.); HUNTERIAN PROFESSOR OF SURGERY; ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—When I informed the Army medical authorities that you had done me the honour of electing me Hunterian professor, and that the subject of my lecture was to be the Surgical Complications of Typhoid and Paratyphoid Fevers, I was asked to deal with the subject fully and to make as detailed and as comprehensive a review as possible of our experience at No. —— Stationary Hospital, the principal British hospital in France for the treatment of these fevers. I have completed this task and propose to publish the review in full, but in this theatre I thought it would be more suitable and appropriate if I confined my lecture to a general discussion of the subject and only attempted to give a detailed account of those complications which are of special surgical interest or have an important relation to the many problems associated with the typhoid group of fevers.

HISTORICAL OUTLINE.

An inquiry into the early records of typhoid fever in this country opens some interesting pages of English history. In war we first find evidence of the disease in 1643, when the ranks of the Parliamentary forces were thinned by an outbreak of infection, from which King Charles's followers also suffered and which they carried with them to the Royalist stronghold at Oxford. Here Thomas Willis was serving the King in the University Legion, and from the detailed account which he gave of this epidemic in his classical work, "De Febribus," there is no doubt that the disease was typhoid fever. This is the same Willis whose name is so familiar to us from the anastomosis of the main cerebral arteries at the base of the brain being named after him.

Since the time of this, its first known appearance in war, typhoid fever has been a menace to armies in all campaigns of any duration and has often cost the British Army dear. In peace as well as in war, however, we have suffered as a nation from the ravages of this disease, which has attacked members of our Royal House on more than one occasion. The very first case which allows of clear demonstration was that of Henry, Prince of Wales, eldest son of King James I., who died in 1612 of a fever epidemic at that time. For the careful description of the illness and the post-mortem appearances, which enabled Dr. Norman Moore to identify the disease as typhoid fever, we are indebted to that distinguished French physician, Sir Theodore de Mayerne, who was in attendance on the Prince during the last part of his illness.

Passing to a time within the memory of some of us we find typhoid fever making us mourn the loss of Prince Albert in 1861, while King Edward, when Prince of Wales, was brought to the brink of the grave by an attack of the same disease ten years later. Among the physicians in attendance on these Royal patients was Sir William Jenner, whose work at the London Fever Hospital from 1847 to 1851 did so much to help in the differentiation of the continued fevers. In 1862 Dr. Charles Murchison, who was then on the staff of the Middlesex Hospital and, like William Jenner, on that of the London Fever Hospital, published his classical work, "The Continued Fevers of Great Britain," which became at once a standard authority and still maintains a prominent place in the literature of the subject. The third edition was edited by another physician to the Middlesex and the London Fever Hospitals, a great authority on these fevers who died only last year, Dr. William Cayley.

* The lecture was illustrated with numerous lantern slides.

Morbid Anatomy and Bacteriology.

The characteristics of the continued fevers generally and of typhoid fever in particular became well recognised owing to careful clinical study and the methodical investigation of morbid anatomy, to which work it would be surprising indeed if we did not find some contribution from John Hunter. Reference to the Hunterian manuscripts shows that Hunter in the course of his "Dissections of Morbid Bodies" gave close attention to the morbid anatomy of this disease, and in the Museum of this College are 13 specimens of the intestinal lesions from Hunter's original collection.

After Hunter, Paget. He was amongst the first to realise the large and interesting field for surgical investigation in the complications and sequelæ of the continued fevers. The first surgeon to give this subject the careful study which Paget saw it deserved was William Keen, of Philadelphia, who discussed it in his Toner lecture of 1876, and whose well-known work, "The Surgical Complications and Sequels of Typhoid Fever," was published in 1898. Between the two dates an epoch-marking discovery was made when in 1880 Eberth demonstrated the *Bacillus typhosus*. During the next decade, with the discovery of other closely allied organisms such as the *Bacillus coli communis*, the bacilli of meat poisoning and others, it became evident that there existed a group of bacilli which were practically identical with the *Bacillus typhosus* morphologically, but which differed in their cultural reactions and pathogenetic properties. A new chapter in the history of the typhoid problem was opened by the discovery of organisms which closely resembled the *Bacillus typhosus*, produced identical symptoms and post-mortem appearances, and yet were distinguishable from it. In 1896 Achard and Bensaude isolated organisms, which they called paratyphoid bacilli, from two patients with typhoid-like fever. In 1898 Gwyn cultivated a similar bacillus from the blood of a patient with symptoms of typhoid fever, and in 1901 Schottmüller described five cases of what was apparently typhoid fever, and in which he had found two species of paratyphoid bacilli. These organisms were named the *Bacillus paratyphosus A* and the *Bacillus paratyphosus B*, forming with the *Bacillus typhosus* a sub-group of the large coli-typhoid group of organisms.

It has been established that the bacilli of the typhoid sub-group are distinct specific micro-organisms, and the diseases to which they give rise are known as typhoid fever, paratyphoid A, and paratyphoid B. In the words of Sir Bertrand Dawson[1]:—

"Looked at broadly, paratyphoid is typhoid fever in miniature. A patient invaded by it stands to be ill less severely and for a shorter time, is less prone to complications, and, *a priori*, less likely to die. It presents a clinical picture which is suggestive, though not absolutely distinctive, and its certain diagnosis from typhoid can only be made with the aid of bacteriological findings," but, "though habitually milder, paratyphoid may present the gravity of severe typhoid."

Paratyphoid A is a milder disease than paratyphoid B, which is the form of paratyphoid fever usually encountered in the Western hemisphere.

DIAGNOSIS: BLOOD PICTURE.

For my analysis of the surgical complications of these fevers I have studied the cases admitted to No. —— Stationary Hospital during the first two years of its existence as an isolation hospital, and have used the 2500 which have been diagnosed definitely as either typhoid, paratyphoid A, or paratyphoid B.

TABLE I.

Disease.	Number of cases.	Deaths.	Mortality, per cent.
Typhoid, inoculated	821 } 1118	27 } 84	3·28 } 7·51
,, not inoculated	297 }	57 }	19·19 }
Paratyphoid A, inoculated ...	123 } 344	0 } 1	0 } 0·29
,, not inoculated...	221 }	1 }	0·45 }
Paratyphoid B, inoculated ...	239 } 1038	1* } 18	0·41 } 1·68
,, not inoculated...	799 }	17 }	2·12 }
Totals	2500	103	4·12

* This patient had lympho-sarcoma.

In many cases, especially in the inoculated, it has not been possible to isolate the infecting bacillus, and we have been dependent for the confirmation and establishment of

the diagnosis on examinations of the patient's serum and the determination of its agglutinating power on the different organisms of the typhoid group. The fact that agglutinins are produced in response to preventive inoculation makes it more difficult to determine whether an inoculated individual is suffering from a typhoid group infection, and, if so, to which organism the infection is due. By means of Dreyer's delicate technique the difficulties of diagnosis have been overcome. The amount of any specific agglutinins present in a patient's serum can be determined with accuracy, and, with few exceptions, by repeated measurement and study of the variations in the agglutinating power of a patient's serum it can be shown what organisms of the typhoid group, if any, are the cause of his illness.

Before discussing the surgical complications a word about the blood picture associated with these infections. As in tuberculosis and influenza and other diseases caused by bacilli, the reaction of the cellular elements of the blood to infection by typhoid or paratyphoid bacilli consists of an increase in the number of lymphocytes at the expense of the polymorphonuclear cells. This change is progressive, and owing to the diminution in the number of polymorphs an actual leucopenia may be produced. When surgical complications supervene this leucopenia is replaced by a leucocytosis with an increase in relative and absolute number of the polymorphonuclear leucocytes, but the number of these cells and the degree of leucocytosis are not so high as are met with in surgical conditions not associated with a bacillary infection.

INTESTINAL HÆMORRHAGE.

Table II. shows the incidence of intestinal hæmorrhage. It demonstrates, like Table I., the greater severity of typhoid as compared with paratyphoid fever, and shows that paratyphoid B is a more severe disease than paratyphoid A. It

TABLE II.—*Intestinal Hæmorrhage.*

Disease.	No. of cases	Hæmorrhage.	Percentage.	Fatal.
Typhoid, inoculated	821	10	1·21	5
,, not inoculated	297	40	13·46	21
Paratyphoid A, inoculated ...	123	0	0·0	0
,, not inoculated...	221	1	0·45	0
Paratyphoid B, inoculated ...	239	1	0·41	0
,, not inoculated...	799	15	1·87	4
Totals	2500	67	2·68	30

also illustrates a point to which I will return—the remarkable effect of inoculation in diminishing the severity of the illness. Though it has been suggested that hæmorrhage from an intestinal ulcer might be dealt with by operation, this course can seldom be practicable. The surgical interest of intestinal hæmorrhage lies rather in its relation to other complications which are essentially surgical in their nature and treatment.

INTESTINAL PERFORATION.

Perforation of the intestine is one of the most formidable and most urgent of the surgical complications of these fevers. The usual frequency in typhoid is once in about every 30 to 40 cases and since it is commoner in males of between 20 and 30 years of age, it will be seen that in the present series (Table III.) the incidence has been small.

TABLE III.—*Intestinal Perforation.*

Disease.	Number of cases.	Cases of perforation.	Percentage.	Cases of operation.	Recovered.	Died.	Day of disease on which perforated.
Typhoid, inoculated	821	3	0·36	2	0	3	13th, 17th, 22nd,
,, not inoculated ...	297	6	2·02	1	0	6	27th, 28th, 31st, 39th, 51st, 70th.
Paratyphoid A, inoculated ...	123	0	0·0	0	0	0	
,, not inoculated	221	2	0·90	1	1	1	25th, 30th.
Paratyphoid B, inoculated ...	239	0	0·0	0	0	0	
,, not inoculated	799	3	0·37	2	0	3	12th, 23rd, 33rd.
Totals	2500	14	0·56	6	1	13	—

While in ambulatory cases perforation may be the first sign of illness it occurs most frequently in the third week. It has been reported as early as the eighth and as late as the 110th day. In the present series 8 out of 14 cases occurred during the fourth and fifth weeks, while one was as early as the twelfth, and another as late as the seventieth day.

As a rule, there are about five cases of ileal perforation to one in the rest of the intestinal tract, but in this series (Table IV.) the proportion of ileal perforations was by no

TABLE IV.—*Site of Intestinal Perforation.*

Disease.	Last 2 feet of ileum.	Ileo-cæcal.	Cæcum.	Appendix.	Descending colon.	Pelvic colon.
Typhoid	5*	2†	1	1†	0	1
Paratyphoid A ...	1	0	0	1	0	0
Paratyphoid B ...	1	0	0	0	1	1
Totals	7	2	1	2	1	2

* In one of the ileal cases there were three perforations.
† In this case there were two perforations.

means so great. In paratyphoid fever the large intestine is involved to a greater extent and is more severely affected than is usual in typhoid and in three out of five cases of perforation in paratyphoid the opening was in the large bowel.

Perforation occurs, as a rule, when the sloughs are separating. The opening is nearly always small and will often only admit a pin. In some cases a cribriform opening is found. Sometimes the peritoneal coat is included in the slough when the perforation is large and generally round or oval.

It is important to be specially on the look-out for symptoms of perforation in severe cases during and after the second week, and particularly in those who have marked tympanites or diarrhœa or have suffered from intestinal hæmorrhage.

Table V. shows the relation of perforation to hæmorrhage in the present series of cases, and it will be seen that nearly a third of the cases of perforation had also suffered from hæmorrhage.

TABLE V.—*Relation of Intestinal Perforation to Hæmorrhage.*

Disease.	Number of cases.	Hæmorrhage.	Perforation.	Hæmorrhage and perforation.
Typhoid	1118	50	9	3
Paratyphoid A ...	344	1	2	0
Paratyphoid B ...	1038	16	3	1
Totals	2500	67	14	4

Diagnosis and Treatment of Perforation.

The diagnosis of perforation may be extremely difficult. In obvious cases which are rare there may be all or most of the symptoms and signs of an acute abdominal lesion, but with the usual small perforation in a patient whose sensations are blunted by toxæmia symptoms may be slight or even absent, and perforation has been found at post-mortem examination when the condition was unsuspected during life. On this occasion I will not go any further into the question of diagnosis than to say that it is important for every aid to be enlisted in cases of doubt, and a blood count may be of great use especially if repeated observations have been made previously, for then smaller changes will be appreciated. Also, since early diagnosis and treatment are essential to success, it is imperative that the surgeon should have the opportunity of seeing the patient when there is the slightest suspicion of perforation having occurred. It is no use waiting until symptoms are well established, for then it may be too late and the case past hope.

"Delays have dangerous ends"—so much so that in a doubtful case the abdomen should be explored. No harm is likely to be done and life may be saved. It is far better to open the abdomen and find no perforation than for a post-mortem examination to reveal one which could have been closed, perhaps with success.

The usual result of perforation if left alone is general peritonitis, but in very rare instances we find evidence of localisation of the infection or protective plastic peritonitis preventing leakage of intestinal contents. Two of our cases showed signs of an attempt by nature to prevent or limit

nfection of the peritoneum. One of them had intestinal obstruction, the possibility of which must be remembered, and a peritoneal band was found obstructing the ileum. The starting-point of the band was a small perforation in the ast part of the ileum, to which the omentum had become adherent. One of Hunter's specimens shows this rare condition; there is a deep ulcer which is evidently about to perforate, but the base is protected by peritoneal adhesions.

These instances support the view that perforation may take place and the patient recover without operation, but they are of such exceptional occurrence that they do not warrant any departure from the universally accepted necessity for immediate laparotomy when a diagnosis of perforation is made.

Some Points in Technique.

While a detailed discussion of technique would be out of place on an occasion like this there are a few points to which I should like to call attention. Operation may be performed under local anæsthesia alone, but a combination of local or spinal analgesia with small doses of ether inhalation is preferable. A word with regard to the incision. An incision through the right rectus is favoured by some surgeons, but though an incision on the right side may be convenient for dealing with a perforation in the usual site—the last portion of the ileum near the cæcum—it may be extremely inconvenient in the case of perforation of the colon. As we have seen, the large intestine is more likely to be the seat of perforation in paratyphoid fever, so that in this disease, at any rate, and probably as a general rule, a mid-line incision will prove the most suitable. As a rule, the perforation is easily found. In nearly 90 per cent. of the cases it is single, but a search should be made for other openings, which, if present, are nearly always in an adjacent coil of intestine.

When the perforation is found it should be closed, as a rule, but if there is intestinal atony, or paresis, or symptoms of pseudo-ileus, it is a wise procedure to perform an enterostomy. The value of intestinal drainage in this condition has been emphasised in recent years. Good results have followed simple drainage of the peritoneal cavity when conditions were desperate and suture of the intestine out of the question.

In the present series the results have been disappointing. The patients were in an extremely critical condition, and operation was undertaken rather as a *dernier ressort* than with much expectation of success. A special factor which weighed against the patients in this series was the high percentage of cases in which the large intestine was the seat of perforation. The greater degree of sepsis in the large bowel would affect the mortality in perforation, as in other surgical conditions of this part of the intestine.

THE SPLEEN.

The spleen forms a prominent feature of the clinical picture and plays an important part in the pathology of the typhoid group of infections, but this viscus is seldom the seat of surgical complications, though focal necrosis is frequently found in fatal cases. That rare accident, spontaneous rupture of the spleen, has occasionally been observed in typhoid without any coexistent or previous malarial infection. Splenic abscess is a rare complication of typhoid and paratyphoid and is practically always, if not always, the result of infarction. In the present series there were three cases of splenic abscess. One occurred in typhoid and two in paratyphoid B. All the cases were fatal and the specific organisms were obtained from the pus in each case.

The greatest surgical interest of the spleen in these fevers is its relation to infection of the biliary passages and the persistence of bacilli in the body, to which I will return when dealing with the carrier problem.

THE LIVER.

The liver also performs important functions in fighting these infections and in fatal cases shows, as a rule, focal necrosis and parenchymatous degeneration, but abscess in this organ is extremely rare. Abscess may arise from a septic infection of the bile passages or infective emboli may reach the liver through the hepatic artery or portal vein. When the infection is carried by the hepatic artery the liver abscess is part of a systemic pyæmia with abscesses in other parts of the body. When the portal vein is the channel of infection there is generally a gangrenous inflammation of some part of the intestinal tract (nearly always the appendix) with thrombosis of the veins in the neighbourhood. Abscesses of the liver in these fevers may be multiple or single. If single, drainage may be provided and the outlook is not bad. In our experience there were two cases of liver abscess; both occurred in paratyphoid B. In one a fatal pylephlebitis followed an abscess round a gangrenous appendix; the pus yielded a pure culture of *Bacillus typhosus B.* In the other case the abscess ruptured into a bronchus and the pus was expectorated. Diplococci and short-chain streptococci were recovered from the pus. The patient did well and eventually returned to duty.

THE GALL-BLADDER.

The elimination of micro-organisms by the liver from the portal circulation and the excretion with the bile of those which are not destroyed goes on constantly during the course of these fevers. In fatal cases pure cultures of typhoid and paratyphoid bacilli are obtained from the contents of the gall-bladder with more certainty than almost any part of the body except the spleen and the bone-marrow. The bacilli may be found in the biliary tract without the patient ever having had symptoms of typhoid or paratyphoid fever, while an acute cholecystitis may be the sole manifestation of a typhoid group infection.

The gall-bladder may also be infected through its arterial blood-supply or by ascending infection from the intestine, but the constant excretion of the bacilli in the bile in the course of these fevers is a possible mode of infection even long after they have disappeared from the systemic circulation. As a rule the passage of these micro-organisms along the biliary tract gives rise to no symptoms or signs of inflammatory reaction, but definite cholecystitis occurs occasionally in the course of these fevers and may be associated with ulceration or even lead to perforation of the gall-bladder.

In such cases there is some question whether the infection carried by the bile leads to the ulceration, or whether the gall-bladder wall is infected by the blood stream and the ulceration is secondary. Probably the condition arises as the result of both methods of invasion.

Though a mild cholecystitis presumably occurs in a fair percentage of cases it is only possible to diagnose the condition with any degree of certainty in a few. In the present series there were 15 cases with more or less definite symptoms of cholecystitis. In only one case was surgical intervention necessary, and, curiously enough, the patient was one of the 14 women of the series.

In the third week of an attack of paratyphoid B the patient, aged 29, developed symptoms of acute cholecystitis. As symptoms persisted operation was decided on, and in the tenth week cholecystectomy was performed, the patient making a good recovery.

The gall-bladder was not enlarged. It contained turbid bile-stained fluid and there was a gall-stone the size of a nutmeg in the neck of the viscus. The omentum was adherent to the fundus, and in the wall nearest the liver was a diffuse infiltration round an abscess which communicated by a small opening in the mucous membrane with the cavity of the gall bladder. The mucous membrane was acutely inflamed with many petechial hæmorrhages under its surface. The *Bacillus paratyphosus B* was obtained in pure culture from the contents of the gall-bladder and from the abscess in its wall.

The stone was a practically pure cholesterin calculus, but was not examined bacteriologically until later when no micro-organisms were found. Possibly it was present before the attack, and may have been the predisposing cause of the cholecystitis, for though the patient had never had any symptoms referred to the gall-bladder before the third week of her attack of paratyphoid, she had suffered from appendicitic abscess three and a half years previously and may have had some infection of the biliary tract then.

We have evidence, however, that gall-stones may form rapidly and within the 60 to 70 days which elapsed in this case, between the time of onset of the paratyphoid and the time when operation was performed.

In Mignot's[2] experiments the formation of two cholesterin gall-stones in a dog took between 5 and 6 months. Hurst and Adams,[3] however, reported the case of a woman, aged 24, from whom 25 faceted cholesterin gall-stones were removed 70 days after the onset of typhoid fever. The *Bacillus typhosus* was obtained in pure culture from the contents of the gall-bladder and from the centre of some of the stones.

The treatment of typhoid cholecystitis is expectant, and surgical intervention is only called for if the symptoms and

signs do not subside or if there is evidence of gall-stone formation. Urotropine has been shown to be a valuable antiseptic for the biliary as well as for the urinary tract, and may be given in doses of as much as 20 grains three times a day. This drug may prove useful in preventing gall-bladder complications and is prescribed with advantage during typhoid and paratyphoid fever.

The main surgical interest in typhoid group infection of the gall-bladder is the occurrence of a mild catarrh which favours the production of gall-stones. Moreover, the infection may persist in the biliary tract for years after an attack of typhoid fever, and the *Bacillus typhosus* has been isolated from the contents of the gall-bladder when operating for gall-stones many years after recovery from the disease. The infection may also persist and linger in the biliary tract, apparently without causing any inflammatory reaction—a point to which I will return when discussing the carrier problem.

CARDIO-VASCULAR SYSTEM.

Of the cardio-vascular system I will say little. The subject of venous thrombosis, the commonest of the surgical complications in the circulatory system, was very fully dealt with in this theatre in Hunterian lectures delivered by Mr. Warrington Haward in 1906. In the present series we had the usual number of cases. (Table VI.) There was also

TABLE VI.—*Venous Thrombosis.*

Disease.	Number of cases.	Thrombosis.	Percentage.	Left side only.	Right side only.	Both sides.
Typhoid, inoculated	821	7	0·85	11	3	3
,, not inoculated	297	10	3·36			
Paratyphoid A, inoculated	123	0	0	2	0	0
,, not inoculated	221	2	0·90			
Paratyphoid B, inoculated	239	3	1·25	19	2	2
,, not inoculated	799	20	2·50			
Totals	2500	42	1·68	32	5	5

the usual preponderance of cases affecting the left side. Keen was convinced that this preponderance was to be explained by the compression of the left common iliac vein where it passes under the right common iliac artery, and Mr. Warrington Haward showed, in addition, that the vein is also crossed by the left internal iliac artery, and that common and internal arteries cross almost at right angles in marked contrast to the relations on the other side.

I have one new point to bring to your notice in the treatment of thrombosis. Citrates are generally recommended, and Captain H. F. Marris has had many remarkably successful results by intravenous administration. He gives 10 ounces of a 0·5 per cent. solution of sodium citrate in saline, and repeats the dose if necessary at intervals of a few days. The dose seems very small, and at present the cases are too few to permit of any definite statement as to the advantages of this method of treatment, but some of the results have been very striking.

THE GENITO-URINARY SYSTEM.

Let us pass now to another excretory channel by which the bacilli of the typhoid group leave the body. In a large number of cases the bacilli are found in the urine at some

TABLE VII.—*Genito-Urinary Complications.*

Disease.	Number of cases.	Renal embolic abscesses.	Pyelitis.	Cystitis.	Prostatitis.	Epididymo-orchitis.	Totals.
Typhoid, inoculated	821	0	0	1	0	0	1
,, not inoculated	297	1	2	1	0	0	4
Paratyphoid A, inoculated	123	0	0	0	0	0	0
,, not inoculated	221	0	1	0	0	0	1
Paratyphoid B, inoculated	239	0	0	0	0	0	0
,, not inoculated	799	0	6	5	1	4	16
Totals	2500	1	9	7	1	4	22

period of the disease, generally about the third week or later, or sometimes not until convalescence. In typhoid they are found in about a quarter of the cases, but in paratyphoid the proportion is less, and in inoculated individuals it is smaller still. When bacilluria is present in the course of these fevers there may be no signs of inflammatory reaction in any part of the urinary tract, but in a certain number of cases there is some pyuria, though this often only amounts to the detection of a few pus cells in the urine.

The cases of urinary disease included in Table VII comprise only those in which there were signs and symptoms directing attention definitely to some part of the urinary tract. In all these cases the specific infecting organisms were present in the urine.

Pyelitis and Cystitis.

Pyelitis and cystitis were diagnosed in 16 cases. The time of infection is generally about the third week, or later, and of the 16 cases 10 began after the third week. Cystitis usually followed an obvious pyelitis, and seemed to be due to a descending infection of the urinary tract. The *Bacillus paratyphosus B* proved more virulent than the other organisms of the group. There were not only more cases in paratyphoid B, but they were more acute and extensive. In one case of paratyphoid B the main stress of the illness fell on the urinary tract, starting with a very acute pyelitis, with some hæmaturia, followed by cystitis, and eventually a suppurating epididymo-orchitis occurred. Pure cultures of *Bacillus paratyphosus B* were obtained from the urine, and also from the pus from the abscess of the testis.

Typhoid and paratyphoid pyelitis and cystitis, as a rule, yield readily to treatment with urinary antiseptics—especially urotropine. In this series no case required local treatment. The excretion of typhoid-group bacilli may persist, however, for some time after the patient gets about, and to this point I will return when discussing the carrier problem, but there is another point which concerns surgeons more particularly, and that is, what influence this bacillary excretion may have in the etiology of surgical disease of the kidney. Micro-organisms pass through the kidneys in a large number of infectious fevers of every degree and severity, from the most acute like influenza to the most chronic like tuberculosis. The permeability of the kidney tissue is increased and albuminuria is common.

Bacilluria and slight pyuria are certainly commoner than has been generally taught, and since these conditions frequently arise in disease which, in their mildest forms, may easily be classed as more or less minor ailments a history of previous illness assumes an increased importance in the case of disease of the urinary tract. Only by a searching inquiry into the previous history and a routine bacteriological examination of the urine and of any parts of the urinary tract which may be explored at operation can we get a true idea of the part played by these specific bacteria in the etiology of urinary disease. Bacterial excretion may have some bearing on calculous disease of the kidney, for the epithelial débris and coagulable deposits resulting from one of these infections may furnish a nucleus for the deposit of salts which would otherwise have remained in solution in the urine. Davies and Walker Hall[4] have reported a case in which, over five years after an attack of typhoid fever, a woman who was a urinary carrier of *Bacillus typhosus* had her right kidney explored and ten calculi removed. The contents of the renal cavity yielded a pure growth of *Bacillus typhosus B*, and this organism was isolated from the calculi also. It is of great importance to increase our information on this subject, and renal calculi should always be submitted to bacteriological examination.

Epididymo-orchitis.

Epididymo-orchitis is an occasional complication and there were four cases in the present series. All occurred in paratyphoid B and the bacillus was obtained in pure culture from three of them, in which suppuration took place. Owing to the body of the testis being involved, as a rule, either alone or to the same extent as the epididymis, it has been taught that the infection in typhoid and paratyphoid is carried by the blood stream. But the organisms of these diseases give rise to so little infiltration that the infection might extend from the urinary tract to the seminiferous tubules before producing an inflammatory reaction. It is different with organisms like the gonococcus, the pyogenic cocci, and the tubercle bacillus which cause considerable thickening and infiltration along the path of their extension. In the case of tuberculous infection a focus of limitation is brought about first at the globus minor.

In the four cases under review it certainly could not be said that the epididymis was first involved or even markedly affected; in fact, the abscesses were all in the body of the testis. In each of the suppurating cases, however, there had been pyelitis and cystitis, and in the case which did not go on to suppuration there was a marked bacilluria and *Bacillus paratyphosus B* was obtained in pure culture from the urine of all of them. It seems therefore reasonable to conclude that the infection in these cases came from the urinary tract, and I believe that many cases which are attributed to infection from the blood stream can be accounted for in the same way.

PAROTITIS.

Parotitis is another complication which is mainly due to local conditions and not to blood infection. Accumulating evidence goes to show that infection extends to this gland through the parotid duct. No doubt infection may reach the parotid by the blood stream as well as by Stenson's duct, but the great majority of cases, if not all, can be explained satisfactorily by infection along the duct. In the present series there was no case of a pyæmic nature. The subject of secondary parotitis was dealt with very fully by Bucknall,[5] who published a series of convincing cases and showed by microscopic examination in fatal ones that the inflammatory changes were confined in the first place to the ducts, centres of the lobules, and the tissues around, the blood-vessels being primarily unaffected.

In these fevers, besides the lowered vitality of the patient and increased liability to septic infection, there are certain local conditions which predispose to an ascending infection of the duct. Owing to fever and a restricted diet the salivary secretion is diminished in amount. At the same time the mouth-breathing so frequent in fever patients leads to further drying of the mucous membrane. Micro-organisms then become more plentiful and virulent. Moreover, the specific bacteria of the disease have frequently been found in the oral secretions. Too much attention cannot therefore be given to the toilet of the mouth in these fevers. Constipation should be avoided and solid food should be given as soon as it is safe to do so.

Parotitis is a serious complication not only as an indication of the septic condition of the patient, and especially of his mouth, but also in itself as an inflammatory or suppurating focus which is under high tension because of the resistant fascia covering the gland. Of the 9 cases in the present series 2 were fatal. Intestinal hæmorrhage was a preceding complication in 4 of the 9 cases, and by causing anæmia of the mucous membrane and dryness of the mouth may have a contributing favour in favouring the parotid infection. It should also be remembered that the administration of morphia favours the development of parotitis.

RESPIRATORY SYSTEM.

I will not say much about the complications in the respiratory system. We had the usual cases of mild laryngitis and three cases of the severe ulcerative type which is so dangerous. (Table VIII.) A careful watch

TABLE VIII.—*Laryngeal Complications.*

Disease.	Cases.	Laryngitis.	Fatal.	Tracheotomy.	Fatal after operation.
Typhoid, inoculated	821	2	0	0	0
,, not inoculated	297	8	3	2	1
Paratyphoid A, inoculated	123	0	0	0	0
,, not inoculated	221	0	0	0	0
Paratyphoid B, inoculated	239	1	0	0	0
,, not inoculated	799	6	0	0	0
Totals	2500	17	3	2	1

has to be kept on these cases as the onset and course may be extremely insidious and the laryngeal disease may only be found at autopsy. At the first sign of either perichondritis or severe dyspnœa or stridor tracheotomy must be performed. Keen and Lüning have shown very clearly the danger of delay in these cases. Three of our typhoid cases were fatal, one man three days after tracheotomy.

My friend, Colonel Davies-Colley performed a timely tracheotomy in a case of ulceration of the epiglottis and aryepiglottidean folds and the patient recovered. As so often happens with typhoid ulceration, laryngeal stenosis occurred and all attempts at removing the tube were unsuccessful.

Considering the frequency of lung complications in typhoid-group infection the rare occurrence of surgical conditions is rather remarkable. Two cases of lung abscess were due to extension from liver abscesses. One recovered. The other case of lung abscess resulted from broncho-pneumonia. One case of empyema was the result of extension of a liver abscess, while another, an interlobar collection, followed pneumonia and was drained with success. Pneumococci were obtained in pure culture from the pus.

JOINT COMPLICATIONS.

The joint affections (Table IX.) met with in the course of these fevers may be divided into (I.) acute arthritis, which may be (*a*) serous or (*b*) suppurative; (II.) subacute arthritis, which is of a serous type, but may go on to suppuration.

TABLE IX.—*Joint Complications.*

Disease.	Cases.	Acute serous arthritis.	Acute suppurative arthritis.	Subacute arthritis.
Typhoid, inoculated	821	1	0	1 { Hip (aged 19). Onset: 36th day.
,, not inoculated	297	0	0	0 —
Paratyphoid A, inoculated	123	0	0	0 —
,, not inoculated	221	0	0	1 { Both knees (aged 30). Onset: 17th and 18th days.
Paratyphoid B, inoculated	239	0	0	1 { Shoulder (aged 22). Onset: 18th day.
,, not inoculated	799	2	0	1 { Hip (aged 33). Onset: 24th day.
Totals	2500	3	0	4 —

Acute Arthritis.

I. (*a*) Quite early in the disease, even at the onset, one or, more often, *many* joints may be the seat of an inflammatory effusion producing a condition very like acute rheumatic arthritis and sometimes mistaken for it. In the present series there were three instances of this type of joint affection. Resolution as usual was complete. The fact that they occur early in the disease, during the stage of bacillæmia, points to these joint reactions being directly due to the specific bacteria of these fevers.

(*b*) Suppurative arthritis is a dangerous complication, and generally proves fatal. It may follow an acute serous arthritis or a subacute arthritis may become purulent, or, again, septic arthritis may be an incident in a general pyæmia or may be the result of extension of suppuration from an osteomyelitis in the neighbourhood of a joint. On the mode of origin of the septic arthritis will depend the time of its onset and also the number of joints affected.

There is abundant evidence of the pyogenic properties of the typhoid group of organisms, but as a rule suppuration in a joint is due to a mixed infection and the prognosis is correspondingly grave. Aspiration of the joint may be tried before proceeding to more radical measures, especially if the arthritis is due to a pure typhoid group infection.

Subacute Arthritis.

II. The type of arthritis in which surgical interest is chiefly centred in these fevers is the subacute form in which a serous effusion takes place quietly into one or occasionally more joints. We had four instances of this type, and they illustrate various points which are to be noticed in these cases. The large joints are affected as a rule, and the arthritis is generally monarticular, though occasionally more than one joint is involved. The onset is in the third week or later. There are more cases in the lower limb than the upper, and the hip is the joint most frequently affected. Recovery is complete as a rule, but in one case there was a tendency to stiffness, which was easily overcome.

The danger of these cases is not suppuration or stiffness, but that they may be so insidious in their onset and course as to be overlooked. The joint may gradually become distended and spontaneous dislocation takes place. Especially

does this apply in the case of the hip-joint, where large muscles mask the effusion. A careful watch must be kept on the large joints, and if a distending effusion develops the affected joint should be aspirated at once.

More and more evidence is accumulating to show that this form of arthritis is directly due to the specific bacteria of the patient's disease. In many cases on aspirating the joint no bacteria are found in the fluid, but from time to time one or other of the bacilli of the typhoid group is isolated. We have only succeeded in isolating the bacillus from one of our cases—a pure culture of *Bacillus paratyphosus B* was obtained from the fluid withdrawn from the case of arthritis of the hip. A striking point in other cases, however, was the character of the effusions which were examined by Captain A. G. Ritchie. The films were exceedingly rich in cells, which points to the effusion having been poured out to fight a bacterial invasion, and, since lymphocytes were numerous, to the invasion being a bacillary one. Probably the bacilli would be found in many more effusions if joints were aspirated early. Orloff's[6] experimental results point the same way, for after injecting joints of rabbits and dogs with cultures of *Bacillus typhosus* he found large numbers of cells in the effusions which resulted, and, in the earlier days, the *Bacillus typhosus*.

BONE COMPLICATIONS.

The *Bacillus typhosus* has been found in the bone marrow in a large proportion of fatal cases in which it has been sought for, and this tissue apparently plays an important rôle in the pathology of the disease.

Bone lesions are rare during the course of typhoid and paratyphoid fever and may be classed as sequels rather than complications as they generally occur in convalescence, or, maybe, months or even years after the patient's recovery. The commonest clinical manifestation of bone disease is an osteo-periostitis, but probably an infection of the bone marrow is the primary underlying cause in all cases. The lesion may suppurate or subside and may then recur; recurrence sometimes taking place more than once, and eventually the case may end in suppuration. The pus from these abscesses yields a pure culture of the specific organisms in a remarkable number of cases. One is forced to the conclusion that in a certain proportion of cases of the typhoid group of fevers infection lingers in the bone marrow, and when some impairment of general health or a local injury provides a focus of lowered resistance this is seized on by the typhoid or paratyphoid bacilli which have been lurking in the bone marrow all the time.

TABLE X.—*Bone Lesions.*

Disease.	Cases		Bone lesions.
Typhoid, inoculated	821	1	20th day. Swelling on 3rd rib; subsided.
,, not inoculated ...	297	3	30th day. Inflammation over left lower rib; subsided. 21st day. Periostitis of tibia; vaccine treatment, subsided. 35th day. Periostitis of rib; subsided.
Paratyphoid A, inoculated ...	123	0	—
,, not inoculated	221	0	—
Paratyphoid B, inoculated ...	239	0	—
,, not inoculated	729	1	30th day. Abscess in connexion with 9th, costo-chondral junction; aspiration; no recurrence.
Totals	2500	5	—

It has been customary to advise radical interference by free excision of the obviously infected tissues, together with a good area surrounding, in those cases which do not subside spontaneously. It has frequently been found that if a partial operation has been done a sinus has persisted for a long time, and in many cases a pure culture of the *Bacillus typhosus* has been obtained from a sinus many months after operation.

Very extensive operations have been undertaken in cases in which the ribs have been infected, but I think other measures should be tried first. If treated by open operation an attempt may be made to close the wound by suture in pure typhoid group infections. Armstrong has suggested puncture of the abscesses and the use of passive hyperæmia, but it is to vaccine treatment, I think, we must turn to rid the body—not only this small bone area—of the persisting typhoid group infection. Secondary infection makes the case much more acute and serious, and it must then be dealt with by free incision, as recognised to be necessary in ordinary septic disease of the bone.

Three of the five cases seen at No. — Stationary Hospital subsided spontaneously and had not recurred when the patients left France. (See Table X.) The tibial case in the course of typhoid fever did not subside at first, but when treated with vaccine great improvement took place.

In the case which occurred in the course of paratyphoid B a periostitis at the ninth costo-chondral junction went on to suppuration. Some pus was withdrawn by syringe and a pure culture of the *Bacillus paratyphosus B* was obtained. Paratyphoid vaccine was injected. On the fifty-fifth day the abscess was aspirated, and a few days afterwards there was nothing abnormal to be felt along the site of the lesion. A fortnight later the patient went to England and there was still no sign of recurrence.

These cases are very few, but the results are suggestive and make one think that aspiration of typhoid and paratyphoid bone abscesses, combined with vaccine treatment, may make the more radical operations less often necessary.

TYPHOID SPINE.

"Typhoid spine" is another sequel which may be regarded as a further instance of the special viability in the bone marrow of the typhoid group of bacilli. The lumbar and dorsi-lumbar regions are the parts of the spine most often affected, and Fraenkel found typhoid bacilli more frequently in the lumbar vertebræ than elsewhere, probably because of the larger amount of bone-marrow in them.

Typhoid spine was originally described by Gibney[7] in 1889 as a "perispondylitis," by which he meant a periostitis with inflammation of neighbouring fibrous structures, and cases reported since X ray examination has been the rule support the view that there is an organic lesion at the root of the trouble. McCrae[8] more than ten years ago demonstrated the deposit of new bone in two cases. Elkin and Halpenny[9] showed that of 72 cases reported up to the end of 1908 only 11 had been examined by X rays, but of 22 published between 1908 and 1914 X ray examination was carried out in 14, and in 11 some lesion was demonstrated.

The skiagrams show periostitis with effusion under the periosteum, changes in the intervertebral discs, and new formation of bone. Carnett[10] also published some convincing cases with X rays.

Long-continued pain in a debilitated individual may well account for exaggeration of symptoms, and in the face of the frequent demonstration of skeletal lesions it is not reasonable to attribute the symptoms entirely to neurosis.

These sequelæ of typhoid have made us realise for many years that recovery from the disease does not mean death of all the infecting organisms, and Keen insisted that a patient who had suffered from typhoid fever should only be allowed to resume the ordinary activities of life very gradually, and should be cautioned as to even slight accidents and warned against any severe physical exertion for several months after he has apparently recovered.

THE CARRIER PROBLEM.

During the last decade we have learnt to realise more and more that latent infections are not only a danger to the individual but also to the community, for in a certain number of cases bacilli are excreted from time to time either in the urine or fæces or both.

In the excretory channels chronic inflammation may be set up by the specific micro-organisms; in the biliary tract a chronic cholecystitis with or without gall-stones may result; in the urinary tract a chronic pyelitis may occur. No doubt a lesion exists in one or other excretory channel in many patients who are chronic carriers, but we have also to consider those cases in which bacilli are excreted either in the fæces or the urine for a long time after the patient is apparently cured and in which there is no sign of disease in the excretory channel concerned.

The Urinary Tract.

Taking the urinary tract first, if bacilluria is associated with pyuria it may be reasonable to regard a local condition in the urinary tract as the possible cause of the persistence of infection, but if there is no pyuria it seems to me that it is indicated to look elsewhere for some breeding-ground which from time to time discharges bacilli into the blood

stream, from which they are abstracted by the kidneys. Even with pyuria, and even if it is proved that excretion of bacteria is only taking place through one kidney, it does not follow that the typhoid condition is purely a local renal one, and it is advisable to seek elsewhere for an infecting focus. The permeability of one kidney only may be increased, and the presence of a local lesion may only be facilitating the excretion of bacilli and is not necessarily the breeding-ground of them. In Davies and Walker Hall's [11] case with five years' history bacilli were found in the blood at different times. The blood was examined during periods of bacillary excretion. Four times it was found to be sterile and twice yielded a strain of *Bacillus typhosus*. It is said that the bacilli were driven from the kidney into the circulation. It seems to me that too much attention is concentrated on the excretory channel, and that the explanation in many cases may well be that some other organ or tissue harbours the bacilli which find their way into the blood stream at intervals.

Bacilli latent in the Bone Marrow.

The question arises at once, Where is that tissue or organ? The bacilli may lurk in many places, but there are some which we know are likely harbours. We know that in the case of typhoid fever the bacilli are to be found in the bone marrow during the disease, and have been shown to be there as long as four months after recovery (Quincke [12]) without causing symptoms. We know that the bacilli may lie there, as other pathogenic bacteria are known to persist in the tissues, in a latent state without causing any disturbance. But they are always capable of doing so if the general health suffers, or some local trauma gives the bacilli the chance of getting the upper hand. Symptoms may then develop and an abscess may result as long as over seven years after convalescence (Buschke [13]).

This fact is very significant and suggestive when considered in relation to the carrier problem, for in the bone-marrow we have a tissue which is known to harbour the bacilli for long periods, and not only that, but it is amongst the parts of the body most constantly infected by them. We must, therefore, hold the bone marrow under suspicion of being concerned as a harbour for the infecting organisms in those patients who do not rid themselves of infection when they recover from the disease.

The Biliary Tract and the Spleen.

Now let us consider the biliary tract and the persistence of typhoid and paratyphoid bacilli in the gall-bladder. Again, attention has been concentrated on the excretory channel. It has been customary to look upon the gall-bladder, whether the seat of inflammation or not, as the great breeding ground of typhoid bacilli, when they have been found there at long periods after the original illness. To my mind, it seems safer to regard this tract as an excretory channel and to look further back for some other possible seat of vegetation and source of continual or repeated infection. Many of the contents of the bile, including bacteria, are simply the sediment from the hepatic filter which has turned these substances down from the blood brought to it from the gastro-intestinal tract and spleen—especially the spleen. The living organisms which get through are those which the liver has failed to kill.

Knowing the important part the spleen takes in combating typhoid and other infections by abstracting bacteria from the blood, we may for the present purpose look on the bile as the splenic effluent. We know how active the spleen is in ridding the circulation of infecting organisms, sometimes enlarging to a great size to deal with the extra task thrown on it. This function of the spleen is probably seen at its best in those cases in which a cholecystitis is the sole manifestation of typhoid, and in those in which bacilli are discharged with the bile and fæces, and the patient has never had any symptoms at all.

But we also know that this organ may become a source of continuous danger, by harbouring infective organisms, instead of ridding itself of them completely. This is well known in certain protozoal infections and is being recognised to an increasing extent with regard to other infections. Other parts of the body have been cleared of infection by stimulating the natural resisting powers by means of vaccines or by administering chemical remedies, but the spleen still persists in its bad habit. Splenectomy has been performed with success to rid the body of lingering infection in malaria (Jonnesco [14]) and in syphilis and pyogenic infection (W. J. Mayo [15]). The spleen is like a scavenger who removes refuse, and thus protects the community from many infective dangers, but who, if not scrupulously careful to attend to his own cleanliness, may become a source of danger by harbouring infective material, which he ought to have sent to the destructor. This dangerous character of the spleen seems to have been recognised in the Elizabethan era, in the literature of which period we find many apt references to this organ, for example—

> "Though I am not splenetive or rash,
> Yet have I something in me dangerous."

In typhoid and paratyphoid fever we know that organisms are found most constantly in the spleen during the attack and in some cases for a considerable time afterwards.

A man, aged 21, died at No. —— Stationary Hospital after being ill for 13 weeks and 5 days. Admitted for typhoid fever which was diagnosed by agglutination, he developed but few symptoms indicative of typhoid and soon was found to be suffering from tuberculosis also. At the post-mortem examination he was shown to have died of miliary tuberculosis, but typhoid bacilli were still present in his spleen in large numbers, though there were no other signs of typhoid about him.

Then in the case reported by Levy and Kayser [16] in 1907, a woman who was a fæcal carrier of *Bacillus typhosus* died three years after having had typhoid fever; typhoid bacilli were obtained from her gall-bladder and from inside a gall-stone, and also from her liver and spleen.

Similar cases have been described and are attributed to auto-infection from the gall-bladder, but some have died without any symptoms of auto-infection, and yet typhoid bacilli have been found in the spleen.

The chain of evidence is not complete, many tissues and organs may harbour the bacilli, but the spleen is under the greatest suspicion. Surgery may not be able to help in ridding the body of infection if it is scattered through many organs and tissues, nor be able to attack the infection if localised in the bone marrow, but if localised in the spleen and splenic effluent surgical aid may yet be invoked and splenectomy be undertaken for persistent typhoid or paratyphoid infection. When pathological conditions exist in the excretory channels treatment will have to be directed to those parts, but the possibility of other seats of vegetation being responsible for the continuance of the infection must not be lost sight of, and when faced with the failure of other methods of treatment surgery may be required to rid the body of this source of danger to the individual and the community.

COMPARISON OF CASES IN INOCULATED AND UNINOCULATED.

By far the most striking point of all in this review is the remarkable difference in severity of disease, incidence of complications and mortality between the inoculated and the non-inoculated. (See Table XI.) In compiling the statistical tables I have given the widest possible interpretation to the term "inoculated" and have included as inoculated all who have had any specific vaccine at all, whether they have had a full dose or not, and also whether or not it has been administered within the time for which it is claimed that protection is conferred. It would have made the tables too elaborate to have done otherwise. Patients with paratyphoid fever who have only been inoculated against typhoid have been counted as non-inoculated.

The statistical tables are convincing enough, but the difference in severity of illness is even more striking when you are brought into actual contact with the patients, for most of the inoculated are obviously suffering from a relatively mild disease. In the unprotected the mortality was more than five times as high as in the protected. This result may well lead to a moment's reflection especially amongst those of us who have been working at Boulogne base. There, under the eyes of its originator, Sir Almroth Wright, we have seen some of the benefits of protective inoculation against those fevers—we have seen this wonderful thing in the country of the great Pasteur and within a stone's throw of France's memorial to Edward Jenner, the founder of scientific protective vaccination.

In these times of war Anstey's ode to Jenner becomes again particularly apt. Ring's translation and paraphrase runs as follows:—

> "While deathless heroes, who maintain our fame,
> And add new glories to the British name,
> Around their brows unfading laurels twine,
> The civic crown, O Jenner, shall be thine."

TABLE XI.

Disease.	Typhoid, inoculated.	Typhoid, not inoculated.	Paratyphoid A, inoculated.	Paratyphoid A, not inoculated.	Paratyphoid B, inoculated.	Paratyphoid B, not inoculated.	Totals.
CASES	821	297	123	221	239	799	2500
DEATHS	27	57	0	1	1*	17	103
MORTALITY	3·28 p.c.	19·19 p.c.	0	0·45 p.c.	0·41 p.c.	2·12 p.c.	4·12 p.c.
Hæmorrhage	10 = 1·21 p.c.	40 = 13·46 p.c.	0	1 = 0·45 p.c.	1 = 0·41 p.c.	15 = 1·87 p.c.	67 = 2·68 p.c.
Perforation	3 = 0·36 p.c.	6 = 2·02 p.c.	0	2 = 0·90 p.c.	0	3 = 0·37 p.c.	14 = 0·56 p.c.
Appendicitis	4 = 0·48 p.c	2 = 0·67 p.c.	0	0	0	5 = 0·62 p.c.	11 = 0·44 p.c.
Peritonitis	0	0	0	0	0	1 = 0·12 p.c.	1 = 0·04 p.c.
Splenic abscess	1 = 0·12 p.c.	0	0	0	0	2 = 0·25 p.c.	3 = 0·12 p.c.
Liver abscess	0	0	0	0	0	2 = 0·25 p.c.	2 = 0·08 p.c.
Suppurating mesenteric glands	1 = 0·12 p.c.	1 = 0·33 p.c.	0	0	0	1 = 0·12 p.c.	3 = 0·12 p.c.
Cholecystitis	4 = 0·48 p.c.	2 = 0·67 p.c.	0	2 = 0·90 p.c.	1 = 0·41 p.c.	6 = 0·75 p.c.	15 = 0·60 p.c.
Gall-stones	1 = 0·12 p.c.	0	0	0	0	1 = 0·12 p.c.	2 = 0·08 p.c.
Stomatitis	0	0	0	0	0	1 = 0·12 p.c.	1 = 0·04 p.c.
Noma	0	1 = 0·33 p.c.	0	0	0	0	1 = 0·04 p.c.
Tonsillitis	10 = 1·21 p.c.	4 = 1·34 p.c.	1 = 0·81 p.c.	7 = 3·16 p.c.	3 = 1·25 p.c.	12 = 1·50 p.c.	37 = 1·48 p.c.
Quinsy	1 = 0·12 p.c.	0	0	0	0	2 = 0·25 p.c.	3 = 0·12 p.c.
Deafness	1 = 0·12 p.c.	1 = 0·33 p.c.	0	2 = 0·90 p.c.	3 = 1·25 p.c.	1 = 0·12 p.c.	8 = 0·32 p.c.
Otitis media	3 = 0·36 p.c.	3 = 1·01 p.c.	0	3 = 1·35 p.c.	0	4 = 0·50 p.c.	13 = 0·52 p.c.
Parotitis	0	6 = 2·02 p.c.	0	1 = 0·45 p.c.	0	2 = 0·25 p.c.	9 = 0·36 p.c.
Laryngitis	2 = 0·24 p.c.	8 = 2·69 p.c.	0	0	1 = 0·41 p.c.	6 = 0·75 p.c.	17 = 0·68 p.c.
Lung abscess	0	0	0	0	0	3 = 0·37 p.c.	3 = 0·12 p.c.
Empyema	0	0	0	0	0	2 = 0·25 p.c.	2 = 0·08 p.c.
Venous thrombosis	7 = 0·85 p.c.	10 = 3·36 p.c.	0	2 = 0·90 p.c.	3 = 1·25 p.c.	20 = 2·50 p.c.	42 = 1·68 p.c.
Urinary	1 = 0·12 p.c.	4 = 1·34 p.c.	0	1 = 0·45 p.c.	0	12 = 1·50 p.c.	18 = 0·72 p.c.
Epididymo-orchitis	0	0	0	0	0	4 = 0·50 p.c.	4 = 0·16 p.c.
Bone lesions	1 = 0·12 p.c.	3 = 1·01 p.c.	0	0	0	1 = 0·12 p.c.	5 = 0·20 p.c.
Arthritis	2 = 0·24 p.c.	0	0	1 = 0·45 p.c.	1 = 0·41 p.c.	3 = 0·37 p.c.	7 = 0·28 p.c.
Muscle lesions	0	3 = 1·01 p.c.	0	0	0	3 = 0·37 p.c.	6 = 0·24 p.c.
Other abscesses	7 = 0·85 p.c.	5 = 1·68 p.c.	0	2 = 0·90 p.c.	0	8 = 1·00 p.c.	22 = 0·88 p.c.
Boils	3 = 0·36 p.c.	2 = 0·67 p.c.	0	0	1 = 0·41 p.c.	3 = 0·37 p.c.	9 = 0·36 p.c.
Erysipelas	0	5 = 1·68 p.c.	0	0	0	0	5 = 0·20 p.c.
Totals	62 = 7·55 p.c.	106 = 35·69 p.c.	1 = 0·81 p.c.	24 = 10·85 p.c.	14 = 5·85 p.c.	123 = 15·39 p.c.	330 = 13·20 p.c.

* This patient had lympho-sarcoma.

With regard to inoculation there is another point, which is possibly one of the most important. The specific bacteria are not found in either blood, fæces, or urine with anything like the same frequency nor in such numbers in the inoculated as in the non-inoculated, since the microbes are killed more rapidly and effectually owing to protective substances being in the body ready for the attack. It follows, therefore, that the sequels and after-effects of typhoid and paratyphoid infection must be fewer in the inoculated, and there is also less chance of infected individuals becoming "carriers" of the bacilli. Therefore not only is the inoculation of immediate and ultimate benefit to the individual and to the Army in largely preventing infection, as shown by the small incidence of cases; in controlling the disease in those who become infected and making the attack milder, complications and sequelæ less frequent, and mortality much smaller; but it will also be of lasting benefit to the community at home by diminishing the number of men who become "carriers."

CONCLUSION.

Before withdrawing from what in its preparation has been occasionally in times of stress rather an onerous task, I should like to refer to the way in which my work has been made a pleasure by the ready help and suggestions so generously given to me by my colleagues at the hospital.

When serving with the British Expedition to Belleisle, Hunter wrote home to his brother: "My fellow creatures at the hospital are a damn'd disagreeable set." No one could have written so from No. —— Stationary Hospital, where all were members of a team working together. We have been fortunate in securing the cordial assistance and coöperation of Colonel Sir Bertrand Dawson, to whom I am much indebted and very grateful for valuable help. To Colonel Andrew Fullerton I am also thankful for assistance and advice as freely given as sought. In the laboratory we have had a series of distinguished workers whose names are familiar to you owing to the contributions they have made to the bacteriological problems of typhoid and paratyphoid fever. Major G. Dreyer worked in the hospital for many months, and in charge of the laboratory we have had Colonel H. W. Grattan, Captain L. Wood, and Captain H. M. Perry, R.A.M.C., and to all of them I am indebted for help and suggestions. To all my colleagues in the wards I have incurred obligations for here a little and there a little. To Colonel C. R. Evans, D.S.O., the officer commanding, I owe a deep debt of gratitude for the way in which he has given me every possible facility; and to my friend Colonel Davies-Colley I owe a tremendous debt of thanks, for when he volunteered for service in Mesopotamia he left all his material, which he placed freely at my disposal. In fact, with so much assistance so readily given I feel "I have gathered a posie of other men's flowers, and nothing but the thread that binds them is mine own."

In working under war conditions I have not been able to refer to much material that I would otherwise have used, and perhaps I need offer no apology for the few references to the literature of the subject.

In conclusion, I wish to thank the members of the Council for the honour which they have conferred on me by electing me Hunterian professor to lecture on this important subject.

> "And here I will make an end,
> And if I have done well and as is fitting the story
> It is that which I desired; but if slenderly
> And meanly, it is that which I could attain unto."

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SERUM DISEASE AFTER INTRATHECAL INJECTIONS OF SERUM.

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THE clinical aspect of serum disease is so familiar that some apology is necessary for raising the subject again, and this perhaps may be offered in a brief comparison between its manifestations after the intrathecal and after the more usual hypodermic method of serum injection. It might naturally be anticipated that intrathecal injection would make a difference, inasmuch as any local reaction in the meninges comparable to the rash sometimes seen to start from the neighbourhood of a hypodermic injection of serum might, from the proximity of the spinal cord and brain, cause special nervous symptoms. The following statements are based on analysis of the clinical notes of cases of cerebro-spinal fever in the Royal Navy.

Meningism due to serum disease.—During the third year of the war out of 96 bacteriologically proved cases of cerebro-spinal fever treated by serums and surviving for ten days or more, 58, or 60 per cent., had a serum reaction, as judged by the appearance of a rash. Among these 58 cases there were 9, or 15·5 per cent., in which the rash was preceded or accompanied by a more or less definite recrudescence of meningitic manifestations, thus, especially when preceding the rash, suggesting a relapse of the disease. These symptoms are relieved by lumbar puncture, and under the assumption that they point to a relapse a fresh injection of serum may be given, as was done in 6 out of the 9 cases. The 3 cases not so injected recovered, and of the 6 cases injected intrathecally with serum 5 were probably made worse, 4 eventually proving fatal, though it is not suggested that death was thus induced. The effect of intrathecal injection of serum presents some peculiar features. Whereas, as is well known, injection into a healthy intrathecal space sets up an aseptic chemical meningitis, injection of anti-meningococcic serum in cerebrospinal fever—as is shown by the clearing of the cerebrospinal fluid—reduces the inflammatory process, presumably by destroying the meningococci. In discussing the injection of immune serum in acute polio-myelitis, Neal, Abramson, and others[1] point out that injection of serum into slightly inflamed meninges sets up in most cases an acute aseptic meningitis shown clinically by fever, rigidity of the neck, and other signs of meningeal irritation. It seems probable that at the time of the serotoxic meningeal reaction the meninges are slightly inflamed, and that, as this is not due to meningococci, a fresh injection of serum aggravates the symptoms and possibly does harm rather than good.

It is therefore desirable to have some means of determining whether there is a genuine relapse which will be benefited by serum or whether the condition is one of meningeal irritation or meningism and a manifestation of serum disease which may be intensified by a further injection of serum. This diagnosis can be made by examination of the cerebro-spinal fluid for the presence of meningococci, and also for the normal reducing agent (glucose) which is absent in relapses of meningitis and present in the meningism due to serum disease (Reveillet, Nové-Josserand, and Langeron[2]). This test, which takes a few minutes only, and so enables a decision to be made on the question whether to withhold or inject serum at once, has been employed by Staff-Surgeon L. Warren, R.N., and by Dr. C. Ker at the City Hospital, Edinburgh, where some naval ratings were treated.

This meningeal manifestation of serum disease is peculiar to intrathecal injection of serum, and though it occurs in a small proportion of cases should be more widely recognised in this country in view of the war-time increase of cerebro-spinal fever. It has not, however, passed unnoticed. Netter and Debré[3] in 1911 gave a good account of it, and regarded it as a result of serotoxic œdema of the meninges. It may also be added that, as the mucous membranes originally attacked by diphtheria are liable to swell at the time of the serum reaction, an analogous sequence may be suggested in the case of meningococcic infection of the meninges.

[1] Arch. Int. Med., Chicago, 1917, xx., 341.
[2] Reveillet, Nové-Josserand, et Langeron: Jour. de Physiol. et Path. Gén., Paris, 1914-15, xvi., 1080.
[3] Netter et Debré: La Méningite Cérébrospinale, p. 264, Paris, 1911.

If the meningism is part of the serum disease to be expected after intrathecal injection, the question arises why it is not noted more often. It does not appear to result from large quantities of serum given, for out of the 9 cases among the 58 naval cases with a serum reaction, 8 had less than 100 c.c., and 4 of these 8 less than 50 c.c.; nor can it be explained as due to an intrathecal injection within a very few days of the appearance of the serum rash. That it is connected with some hypersensitiveness of the meninges is probable enough, but it is impossible to go beyond this vague statement.

The frequency of serum reactions after intrathecal injections.—Flexner[4] remarks that possibly the manifestations of serum disease are more frequent after the intrathecal than after the subcutaneous injection of serum, and at first some of the figures relating to the naval cases appear to confirm this; thus, out of 61 cases of cerebro-spinal fever which received Flexner's serum intrathecally only and recovered or (if fatal) survived more than 10 days, 43, or 70 per cent., had a serum rash. Whereas out of Currie's[5] 50 cases of cerebro-spinal fever treated mainly by subcutaneous injection (36 by subcutaneous injection only, 13 by one intrathecal and the other injections subcutaneously, and 1 case by one intrathecal, one intravenous, and the remaining injections subcutaneously), 29, or 58 per cent., had rashes. The incidence of serum rashes after ordinary hypodermic injections is given by Goodall[6] from analysis of a large number of cases, as about a third, so that the percentage of 70 is in excess of Currie's and Goodall's figures. But the naval cases, besides being rather few, were all injected with Flexner's serum, which seems to be specially effective in inducing a serum reaction. Out of 241 naval cases given various brands of serum (in some instances hypodermically as well) during the first three years of the war, and surviving for ten days or more, rashes occurred in 99, or 41 per cent. This is indeed lower than the incidence (44 per cent.) of serum rashes among 37,277 cases of diphtheria treated by serum during the years 1898–1903 in the hospitals of the Metropolitan Asylums Board, and very much lower than in some other series where serum rashes were specially looked for and found in from 67 to 81 per cent. of the cases (J. D. Rolleston[7]). It does not therefore appear to be proved that the incidence of serum disease is higher after intrathecal than after the hypodermic method of injection.

Bad effects from increased intracranial pressure caused by intrathecal injection of serum are so well known and the precautions necessary to avoid this accident so well recognised that they do not require further discussion.

Intrathecal injections of serum in rare instances are followed by *secondary infections* through the wound, especially after a large number of lumbar punctures. Secondary infection may also occur through the blood-stream, and it has been thought that this may be favoured by the injection of serum. Netter and Salanier[8] refer to 22 cases of secondary pneumococcic infection of meningococcic meningitis treated by intrathecal injections of serum during the first four months of 1917, when from the increased incidence of primary pneumococcic meningitis since December, 1916, the virulence of the pneumococcus was presumably intensified. These authors suggest that the injection of serum into the subarachnoid space, especially when large quantities of serum not corresponding to the type of the meningococcus present are given, may provide a better culture medium and so favour pneumococcic infection. But since a mixed meningococcic and pneumococcic infection of the meninges may occur before lumbar puncture, as was found in a naval case, it is clear that secondary pneumococcic infection does not necessarily depend on intrathecal injection of serum. Further, the secondary pneumococcic infection would appear to depend mainly on the virulence of the pneumococcus, for in a previous series of 300 cases of meningococcic meningitis Netter and Salanier[9] found 4 cases only of secondary pneumococcic infection.

To sum up: (1) Symptoms of meningeal irritation may precede or accompany the appearance of the serum rash.

[4] Flexner: Mode of Infection, Means of Prevention, and Specific Treatment of Epidemic Meningitis, The Rockefeller Institute, N.Y., p. 42, 1917.
[5] Currie: Jour. Hyg., Cambridge, 1908, viii., 457.
[6] Goodall, E. W.: System of Medicine (Allbutt and Rolleston), 1911, ix., 113.
[7] J. D. Rolleston: Practitioner, 1905, lxxiv., 660.
[8] Netter and Salanier: Bull. et Mém. Soc. Méd. des Hôp. de Paris, 1917, 3e sér., xli., 789.
[9] Idem: Ibid., p. 394.

(2) Though serum disease is frequent after intrathecal injection of serum, especially after Flexner's antimeningitis serum, it is not clear that it is more frequent than after hypodermic injection of serum. (3) Intrathecal injection of serum necessarily involves risk of inducing increased intracranial pressure and may introduce a secondary infection; but it is not proved that the volume of serum injection favours a secondary infection of the meninges from the blood-stream.

A NOTE ON

SERUM SICKNESS IN CEREBRO-SPINAL MENINGITIS.

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THE occurrence of what appeared to be an unduly large number of serum reactions in a series of cases treated with Flexner's serum suggested that a study of these reactions, especially with relation to any effect they might have on the subsequent course of the case, might prove interesting.

Summary of Cases.

There were 60 cases in the series, but a certain number of these died before there was any probability of a reaction occurring. However, 48 patients lived nine days or over, and 36, or 76 per cent., of these suffered from serum sickness. It is quite possible that this number would have been appreciably increased had the fatal cases included in the group lived a few days longer. The reactions were, as a rule, sharp, and in most cases were accompanied by considerable fever. The outstanding feature was, as usual, the rash, which most often started as an urticaria and ran into a multiform erythema. There was much skin irritation, and those patients whose consciousness was not blunted by their original illness were much distressed by the itching. Arthritis was only noted in 6 cases, but in these was very severe, and may have been present in a milder form in some others. Adenitis of the cervical glands was very well marked in two instances. An interesting point was the occurrence in 9 cases of prodromal fever for 12 or 24 hours before any other symptoms, and, as this was occasionally accompanied by an exacerbation or relapse of the meningitic signs, it was liable to be somewhat misleading.

More than two-thirds of the reactions commenced on the eighth, ninth, or tenth days from the date of the first injection. The actual dates are given in Table I.

TABLE I.—*Showing Days on which the Rashes Commenced.*

Day from first injection.	No. of cases.	Day from first injection.	No. of cases.
6th	2	11th	2
7th	4	12th	1
8th	7	14th	1
9th	13	21st	1
10th	5		

It will be noticed that more than a third of the total reactions commenced on the ninth day. In many of the cases the symptoms lasted for several days, on an average much longer than I have been in the habit of observing in diphtheria. Thus in 19 patients the rash was troublesome for four days and over, and in 3 it lasted for fully eight days.

Aseptic Meningitis.

It is now well understood that the introduction of horse serum into the spinal canal is liable to set up a local reaction which may be described as an aseptic meningitis. Thus the clear fluid of a case, which is ultimately proved to be tubercular, may after a serum injection be found to be distinctly turbid. In two such clear fluids polymorphs and large numbers of endothelial cells were found at the next tapping, but I have no other cases in which a second puncture was made. On the other hand, in 4 cases of cerebro-spinal meningitis, in which the fluid was improving after a course of injections but was still slightly turbid, Dr. Washburn, our bacteriologist, reported "a shower of fresh polymorphs" which stained well and contrasted strongly with the disintegrated and broken-up cells of the previous day's fluid. In all these cases the serum reaction and rash followed within a few days, and it appeared that a meningeal reaction was a prodromal sign of the more usual phenomena. The possibility, then, of a fluid becoming more turbid from this cause must be remembered, and in the absence of germs it is probably wise not to take an increase in turbidity too seriously. As my attention was drawn to this point somewhat late in the series of cases, I am inclined to believe that this change in the fluid may occur more frequently than I have noted.

In only two cases have I notes of the meningeal symptoms being aggravated during the actual serum sickness. The serum reaction in one of these was interesting. The patient had had four injections on the first four days of his treatment, and was punctured again three days later. On this occasion the fluid was clear, with no micro-organisms in the direct film, although they were detected next day in the incubated fluid. He received his fifth injection and the temperature rose to 100·5° F. the same evening. He became restless and vomited. The temperature remained up next day, and in the evening the first signs of an urticarial rash appeared. On the following day he had severe headache and turbid fluid was obtained on puncture. He was again injected, but his fever continued, arthritis was present, and his headache was again severe. He was again injected next day as the symptoms continued, and the fluid on this occasion was merely opalescent. On neither of these days were diplococci detected in the smears. The rash was now very profuse, and, although the fever continued, no further punctures were thought desirable for eight days, when a clear sterile fluid was obtained. The turbidity in this case appeared to be due to the serum reaction. Another patient, who showed marked head retraction during the period of his rash, was not punctured, as the facts seemed to point against a relapse. I may add that I found that Fehling's solution was reduced by all the fluids which appeared to become more turbid as the result of a serum reaction.

Incidence of Rashes after Intrathecal Injection.—Influence of Dosage.

The great number of rashes might suggest that intrathecal injection is more liable to cause them than the subcutaneous method. I do not think, however, there is any reason to believe this to be the case. In the first place J. D. Rolleston[1] has reported from 69 per cent. to 81 per cent. of rashes following subcutaneous injection of horse serum. While I have never observed such a high percentage, it is not uncommon to find that the use of certain consignments of serum is followed by the appearance of an unusually large number of rashes, and it is generally admitted that the blood of some horses is much more irritating than that of others. I fancy that the large number of reactions following the use of this particular serum of Flexner is due to some peculiarity of the horses. Sophian has observed rashes in 60 per cent. of his cases. Our own experience of intrathecal injection at the Edinburgh City Hospital is illustrated by Table II., which shows that, while one other serum gives a percentage nearly as high as Flexner's, intrathecal injection does not invariably cause an undue amount of serum sickness.

TABLE II.—*Percentage of Rashes.*

Serum.	No. of cases.	Percentage of rashes.
Flexner (1907-08)	28	25
Burroughs Wellcome (1915)	19	26
Parke, Davis and Co. (1915)	10	40
Lister Institute (1916-17)	7	71
Flexner (1916-17)	48	75
All cases	112	50·8

My records do not show that the occurrence of the rash is much influenced by the dosage. Of four patients who did not suffer from cerebro-spinal fever, but who received a dose of serum on admission, two, or 50 per cent., had reactions. Of 11 cases of meningitis in which no reaction occurred, one received seven injections and five others as many as five, the remainder receiving a smaller amount. For some time I believed that an injection given after an interval of two or three days tended to produce an almost immediate reaction, and many of our charts strongly suggest such a view. But in the first place 18 patients, who had only a course of from

[1] Practitioner, May, 1905.

three to six daily consecutive injections and no subsequent intrathecal treatment, had rashes; and, secondly, a careful study of the charts showed that the later injections, given after an interval in the remaining cases, were very often from the eighth to the tenth day after admission—in other words, just at the period at which a rash might be expected in any case.

Effect on Course of Case.

It might naturally be asked what effect sharp attacks of serum sickness, lasting in some instances for as long as six or eight days, have in the course of the case? Personally I have been accustomed to regard them more as an advantage than otherwise. In the case of diphtheria I have for long been convinced that a smart reaction, especially when accompanied by pyrexia, is often of the greatest benefit to a patient with a poor pulse and subnormal temperature, and seems to stimulate the recuperative powers. Rolleston, in the paper above quoted, considers that the occurrence of rashes is to be regarded as a favourable prognostic sign. It is only fair, however, to admit that my own views on this question do not find general acceptance. Nevertheless I think many cerebro-spinal patients are much improved by these reactions, and in no case, when their nature was recognised, have the latter caused me anxiety. It is difficult to say to what the benefit is due, probably to some stimulation of metabolism and the processes of repair, as I take it to be the case in diphtheria. But our predecessors were accustomed to blister and counter-irritate in cases of meningitis, and presumably, in their experience, benefit, if only of a temporary kind, was obtained by this procedure. It would be difficult to devise a more thorough system of counter-irritation than is provided by most of the rashes I have seen with this particular serum, and I am prepared to believe that in cases which apparently are threatening to enter the chronic stage the improvement may be due to this cause.

One other point remains. While I personally have not persisted with injections through more than two or three serum reactions, I have not, on the other hand, observed any special ill-effects in doing so. But I understand accidents have been reported, and my present practice is not to inject in presence of a serum reaction unless the diplococci in the spinal fluid appear to be increasing. The Fehling test is a useful means of determining whether a rise of temperature, with an exacerbation of meningeal symptoms, is caused by a reaction or by a recrudescence of the disease.

EXAMINATION OF THE URINE IN CASES OF RELAPSING FEVER OCCURRING IN MACEDONIA.

BY LEONARD S. DUDGEON, F.R.C.P. LOND.,
LIEUTENANT-COLONEL, R.A.M.C. (TEMP.); CONSULTING BACTERIOLOGIST, SALONIKA ARMY.

THESE investigations include the examination of the urine in 100 cases of relapsing fever, but only 89 samples were examined for the organism of the disease. The cases occurred in Macedonia and included all ranks of the Salonika Force, muleteers, and Greek labourers. In most instances lice were found in the clothes, but instances occurred in which there was complete absence of lice, and further, the skin of these men was free from suspicion. Most observers consider that lice are the carriers of this infection, others also include the bed-bug. Stitt states as follows: With the European relapsing fever bed-bugs have been suggested as transmitting agents, while Castellani gives his opinion to the effect that relapsing fever may possibly be transmitted by bed-bugs, but more probably is spread by lice.

In these investigations the spirochæta of relapsing fever was found in the urine on 27 occasions out of the 89 specimens which were especially examined for this purpose. This total is very high, and as the organism was present on some occasions in very large numbers it is possible that its presence is of importance as regards the question of infectivity of the urine. If infection can spread in this way, as is quite probable, then every possible care should be adopted to avoid carrying urine about in such a manner that a fair proportion is upset over the individual who is transporting it. It is a remarkable fact that at the present day every precaution is taken to avoid contamination of soil with normal urine, and yet abnormal and infectious urine may be transported from one end of a hospital to another, or even further, in an open glass vessel, or perhaps a paper cap may be applied, but no further precautions are adopted.

These facts are rendered even more important if we refer to the Memoranda on Medical Diseases in the Mediterranean War Area published by the War Office. Here a statement is made which will be quoted as printed: "Remember that the spirochæte has been found in the sweat and in the tears and that it has been proved capable of passing through intact mucous membrane and the unbroken skin."

The Examination of the Urine.

The urine was collected in large test-tubes, which were closed with sterile plugs fitted with care after soaking in melted paraffin. These plugs were warmed just before the tubes were required. It is necessary to mention at the outset that the urine was sent to the laboratory as soon as possible after it was collected, but as the infectious hospital is situated on the mountain side some miles from the laboratory ideal methods, so easily accomplished in England, were not possible on every occasion. Further, in many instances specimens were obtained before and after special treatment had been adopted. The samples of urine, as soon as they were received, were centrifugalised at high speed in an electric centrifuge.

The clear urine was examined for albumin and the deposit was made use of as follows: Film preparations were made on glass slides, dried at 37° C., fixed in formalin vapour for one hour, and redried at 37° C. The films were then treated by the Levaditi method for the staining of spirochætæ in the tissues and then examined in the usual way. Other film preparations were dried at 37° C., fixed in alcohol, and then stained for 20 hours by Giemsa's method, but this was not found to be as satisfactory, as the spirochætæ were very difficult to find owing to the presence in the deposit of numerous casts and cells which obscured the fields of vision. Hanging-drop preparations were made and examined with dark-ground illumination, but owing to the presence of innumerable filaments which are liable to give rise to error, and also to the bulky deposit which is present so often in these samples of urine, little reliance could be placed on this method of examination. The pyridin method was employed, but staining with nitrate of silver, as in the Levaditi process, was found to give the best results. The remainder of the urinary deposit was examined in the fresh state for casts and cells.

No cultural experiments were made, and animal inoculations, with the exception of guinea-pigs, were not possible, as monkeys, rats, and mice cannot be obtained in Macedonia for experimental purposes. Guinea-pigs inoculated with the infected urines from patients with relapsing fever did not show any ill effect, but after a period of ten days they were killed, the livers emulsified in saline, and other pigs were injected with the extracts intraperitoneally, but without effect.

The urine obtained from the cases of relapsing fever was examined at the commencement of the febrile attack, after specific treatment had been completed, and again at various intervals during the period of convalescence, because at the present time it is the custom here not to discharge patients from hospital until the urine is found to be normal.

The presence of albumin.—In the majority of the cases albumin was present, from a trace to a very obvious amount, but in some instances it could not be detected by the picric-acid or boiling test, although casts were found; usually, however, in such cases albumin was demonstrated at a later period of the disease. Once convalescence was established the urine gradually returned to the normal.

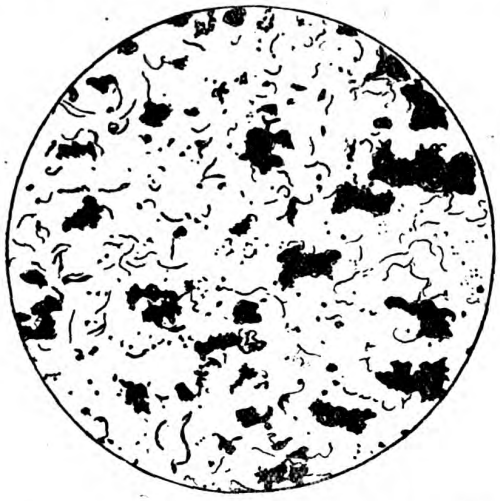
Deposit in the urine.—Every specimen of urine was centrifugalised at high speed and the deposit examined in the fresh state. Casts were usually found, especially hyaline and granular, which were often present in the deposit in very large numbers; epithelial and leucocytal casts were common, but red cell casts were comparatively uncommon. In addition to the presence of casts in the urine, red cells and leucocytes were very numerous on many occasions and also epithelial cells from the urinary tract. Uric acid crystals were abundant but generally subsequent to the acute stages or to the period of active treatment with one of the arsenical preparations.

Numerous observations were made on the condition of the urine before and after treatment with kharsivan. At the infectious hospital it is customary to give 0·25 gm. of this drug intravenously as soon as the disease is diagnosed, and in many instances distinct improvement in the condition of the urine occurred, usually gradually, but occasionally rapidly. It is important to remember that a heavy trace of

albumin and numerous casts in the urine do not contra-indicate the employment of kharsivan intravenously, otherwise such treatment could not have been employed in this series of cases. In the book published by the War Office on Medical Diseases in the Mediterranean War Area it is definitely stated that even if albumin is present this line of treatment is not contraindicated. Further improvement in the condition of the urine occurred after the injection of the drug and was maintained, and it was not uncommonly noticed that the albumin and casts diminished as soon as the kharsivan had had sufficient time to produce its effect.

Morphological Characters.—Notes of Cases.

The morphological characters of the spirochæta found in the blood in these Macedonian cases showed several coarse spiral turns and numerous figures of "8," while it had a great affinity for the ordinary stains. The long straight spiral with the faintest deviations from the straight line was uncommon. In cultures of glucose citrated broth, as employed by Clarke and myself for the cultivation of *Plasmodium falciparum*, the coarse spirals could be found in enormous numbers and had a great tendency to agglutinate and to show beading after 24 to 40 hours life outside the body. In the urine spirals with coarse turns were present and twisted elements of various shapes, while spirals with tapering extremities were common. In most instances much time was required to find the spirochætæ in the slides stained by Levaditi's method because of the extraneous matter which stained black and was present in large amount. On a few occasions spirochætæ were numerous in the preparations of the deposit as shown in the accompanying drawing



Urinary deposit from a case of relapsing fever, showing large numbers of spirochætæ. (Stained by Levaditi's method.)

In the case of an officer who contracted this disease, but who was considered to be suffering from malaria on clinical evidence, the result of the examination of the urine suggested relapsing fever before the blood was examined. The condition of the urine in this case is of sufficient interest to record in detail.

When this patient's blood was first examined his temperature was 102·8° F., and spirochætæ were demonstrated in the blood smears, while the urine contained much albumin, many red cells, epithelial cells, and numerous spirochætæ. The temperature fell to normal after kharsivan, casts disappeared from the urine, the albumin diminished, and finally disappeared. Six days from the height of the illness the temperature was normal, but spirochætæ were present in the urine, together with a certain number of epithelial cells, while a similar result was obtained eight days later, except that numerous red cells were found on this occasion. At the end of 14 days from the onset the urine became and remained normal until the examinations were completed.

It is of interest to record that in no less than five instances spirochætæ were found in the urine before they were demonstrated in the blood.

Bile pigment was absent from the urine in every case and true jaundice was not noted.

One fatal case occurred on whom I made a complete post-mortem examination.

The analysis of the urine before death showed a trace of albumin, red cells, numerous granular and hyaline casts, leucocytes, and epithelial cells. Urine taken from the bladder at the autopsy which was made a few hours after death, showed an increased amount of albumin and all possible varieties of casts, but blood casts were especially numerous. In each instance spirochætæ were found in the urine by the method of Levaditi. There was evidence of chronic inflammation and diffuse degeneration of the tubular epithelium throughout the kidneys, but especially of the convoluted tubules, while numerous casts were present in the lumina of the tubules. Smears made from the lungs in the region of the pulmonary hæmorrhages revealed numerous spirochætæ when stained with Giemsa, but none could be demonstrated in the tissues by the method of Levaditi.

I am greatly indebted to various officers of the Salonika Force for their assistance during these investigations, but especially to Lieutenant-Colonel Cross, officer in charge of the infectious hospital, for invaluable help, and to one of his officers, Captain Stewart, M.C., for every possible assistance rendered on numerous occasions. The excellent black-and-white drawing which accompanies this communication was made for me by Private Panichelli.

Addendum.

Since this communication was sent to THE LANCET two important papers have quite recently appeared in the *British Medical Journal*.

Lieutenant Stoddard[5] considers from his personal experience that (1) spirochætæ are not uncommon in the male urethra without signs of relapsing fever; (2) that many varieties are met with; (3) that spirochætæ are a source of contamination in uncatheterised urines. He examined 100 men, of whom 50 included cases of all kinds and 50 men from U.S.A. who were in excellent health, while none of the series had ever suffered from "relapsing fever," or more correctly fever of a relapsing type, in his opinion. As a result of these observations 46 per cent. of urethral films showed spirochætæ, while if the *refringens* type is included it amounted to 56 per cent in series (1), while in series (2) 20 per cent. were found, or 22 per cent. if we include the *refringens* form. Lieutenant Stoddard ascribes the difference in the results which he obtained to a question of health, as the sick men will give a higher percentage of spirochætæ in the urethra than the U.S.A. men who were so fit. In a large percentage of his cases spirochætæ were numerous in the film preparations of the urethra.

Major Patterson[6] records his observations on the examination of the urine for spirochætæ which are not exactly in agreement with the results or conclusions as given by Lieutenant Stoddard. These observations are based on the examination of the urine in certain clinical types of P.U.O., and he found that: (1) Spirochætæ occur in the urine in cases of trench nephritis; (2) abdominal types of P.U.O.; (3) relapsing types of P.U.O. (trench fever). The spirochætæ which he found in the urine were very resistant to staining, as they were uncoloured by Leishman, Romanowsky, and Giemsa, and required a mordant, while they were found in the urine often abundantly after the rise of temperature.

My own observations are based on the examination of cases of European relapsing fever in Macedonia, and not with cases of fever which on clinical evidence are said to have "relapsed," as this group is considerable and would include the majority of diseases as met with in the Balkans. The spirochæta of relapsing fever, as met with here, when examined in the fresh state by dark-ground illuminations, preserves a perfect corkscrew shape, while similar material fixed and stained with Giemsa will show, in addition to the typical corkscrew spirochætæ, many others in which the corkscrew appearance is more or less lost or most irregular. This distinction between the morphological characteristics of the spirochæta in the fresh state and the preparation stained with Giemsa is still further exaggerated when a comparison is made with the Giemsa stained preparation from urine and those made with Levaditi. In my opinion the morphological appearances are very dissimilar under these varying conditions.

If we next refer to the high percentage of positive findings obtained by Lieutenant Stoddard in his first series among men of whom it was possible to exclude any form of "relapsing fever," it is at once apparent that his results show a much greater percentage of positive findings than in my series, in spite of the fact that the Balkan cases were suffering from true relapsing fever. Further, the majority of these cases had albumin, or red cells, or casts which were often abundant in the urine, with the spirochætæ. The low condition of health would be a common factor in each series. It is, however, the appearance in the urine of albumin, red cells, and casts which is so important in the urine of true relapsing fever, and serves as an explanation for the presence of the spirochætæ in the urine. The

findings of Lieutenant Stoddard, however, are extremely important, especially as we are in the "spirochætal period of medicine" at the present time. A catheter was never employed in my cases, because I consider that warm urine is the best flush for the urethra, and have long discarded catheters, as in my opinion passing "rods" along the urethra is not to be recommended for bacteriological purposes except when circumstances especially demand it.

References.—1. Castellani and Chalmers: Manual of Tropical Medicine, second edition, 1913. 2. Stitt, E. R.: Practical Bacteriology, Blood Work, and Animal Parasitology, fourth edition, 1916. 3. Memoranda on some Medical Diseases in the Mediterranean War Area with some Sanitary Notes, 1916. 4. Dudgeon, L. S., and Clarke, Cecil: On the Cultivation of the Malarial Parasite in Vitro, THE LANCET, April 7th, 1917. 5. The Occurrence of Spirochætes in the Urine, Brit. Med. Jour., Sept. 29th, 1917, by J. L. Stoddard, First Lieutenant, U.S.A. 6. Spirochætes Occurring in the Urine of Cases of Pyrexia of Unknown Origin, ibid., Sept. 29th, 1917, by Major S. W. Patterson, R.A.M.C.

"COLLOSOL" COCAINE.

BY G. BARGER, M.A., D.Sc., H. H. DALE, M.D., F.R.S.,
AND
FLORENCE M. DURHAM.

(*From the Department of Biochemistry and Pharmacology, Medical Research Committee.*)

IN April and May of this year statements were published in THE LANCET (April 28th and May 19th) and *British Medical Journal* (May 5th and 19th) which embodied preliminary reports on the above preparation of cocaine by Professor R. Tanner Hewlett, Professor W. J. Simpson, and by Dr. John Eyre.

It was claimed that cocaine in this form retained its local anæsthetic action, but had lost its general toxicity; and the observations described in the reports seemed to afford justification for such a conclusion. If the statement could be accepted, it would obviously have not only practical importance but theoretical interest of a very high order. It did not appear to us to have any obvious relation with the colloidal condition of the alkaloid, which was put forward by the manufacturers in explanation of the anomaly. We decided to investigate the matter further, but our observations have failed to confirm the existence of the suggested disparity between toxicity and anæsthetic power. In the samples which we examined the toxicity was, indeed, much lower than that of an ordinary 1 per cent. solution of a cocaine salt; but the local anæsthetic action was low to a corresponding degree, and both actions corresponded satisfactorily with the proportion of cocaine chemically recoverable from the solution.

It seems desirable to publish our results, in view of the publicity given to the earlier observations. We believe that we can indicate some sources of error in these, and the exposure of a trap in which experienced observers seem to have been caught may always have value for others. We wish to make it clear, however, that we have no reason whatever to doubt the bona fides of the manufacturers, who have withdrawn "collosol" cocaine from their list on hearing from us of our conclusions. Our criticism is concerned with "collosol" cocaine alone among their preparations, though less easily tested claims, made on behalf of other "collosol" alkaloids, should, in our opinion, lose what indirect support they seemed to receive from the earlier observations on "collosol" cocaine. The allegation that a substance is presented in colloidal solution should not be regarded as sufficient ground for a claim that it possesses properties otherwise mysterious or incredible.

On consideration of the earlier reports and of the information given to us by the makers, it appeared that several points required further investigation.

1. The local anæsthetic action should be determined in a more quantitative manner. The degree of anæsthesia produced in the rabbit's eye by a given solution of cocaine varies widely in different animals. We compared the various samples of "collosol" cocaine with solutions of cocaine hydrochloride of known strength, making each comparison by instilling equal quantities of solution into opposite eyes of the same rabbit or into the same eye with a sufficient interval for complete recovery. The test stimulus was kept uniform and the duration of the different degrees of anæsthesia recorded in each case. In this way we were able to recognise that none of the five samples examined approached a 1 per cent. solution of cocaine (as hydrochloride) in anæsthetic action. Three of them had an action nearly equivalent to that of 0·25 per cent. cocaine, the other two had a much weaker action, so weak that a concomitant irritating effect, presumably due to other constituents, made it impossible to match the activity with that of a pure cocaine solution.

2. The toxicity of cocaine given by intravenous injection varies very widely with the rate at which it is introduced into the circulation. If a solution which is supposed to contain 1 per cent. of cocaine, but in reality contains much less, is injected at the same rate as a standard 1 per cent. solution, the real discrepancy between the toxicities will be very greatly exaggerated. For comparison of toxicities of cocaine solutions by this method all injections must be made at the greatest rate compatible with the avoidance of injury to the heart by mere volume effects.

We chose for tests of toxicity the three samples of which the anæsthetic action corresponded to that of 0·25 per cent. cocaine. One was tested by hypodermic injection into mice, the second by intravenous injection into rabbits, and the third by both methods. Material was not available for very exact determinations, but in every case the lethal dose of the "collosol" sample was four times that of a 1 per cent. solution of cocaine, within the limits of accuracy set by the nature of the test and the number of experiments possible. Two of the preparations appeared to contain some substance which depressed the tremors and convulsions seen with non-fatal doses of pure cocaine, but this action did not appear to raise the lethal dose.

3. The same three samples were examined chemically, the solution being made alkaline with ammonia and shaken with successive quantities of ether. The washed ethereal extracts were united and evaporated and the residue of cocaine weighed. From one sample the cocaine was obtained pure and crystalline, with the correct melting point. The residues from the other two contained traces of non-crystalline material, but had the physiological action of pure cocaine. In each case the quantity of cocaine obtained was approximately 24 milligrammes per 10 c.c. of solution—i.e., 0·24 per cent.

4. Part of one sample was filtered through a wet collodion membrane under a pressure of about 25 cm. of mercury. The colouring matter in the solution was held back by the membrane, the filtrate being quite colourless. The cocaine was extracted from the filtrate and weighed, the quantity found being 23 milligrammes per 10 c.c., or 0·23 per cent. Allowing for the wetness of the membrane, it may be said that the cocaine passes quantitatively through it. The cocaine which is present is, therefore, in the form of an ordinary salt, and is not in colloidal solution.

Conclusions.

1. The local anæsthetic action of three samples of "collosol" cocaine corresponded roughly with that of a 0·25 per cent. solution of pure cocaine. In two other samples it was much lower.

2. The toxicity of the three better samples was about one quarter of that of 1 per cent. cocaine.

3. The quantity of cocaine chemically recoverable from each of the same three samples was approximately 0·24 per cent. instead of 1 per cent. as indicated.

4. The cocaine which was present passed freely through a collodion membrane, and was therefore not in colloidal solution.

DONATIONS AND BEQUESTS.—Aberdeen University will benefit to the extent of some £12,000 under the will of Dr. Archibald Carmichael, formerly of Barrow-in-Furness, and latterly resident in Perth, who died on Feb. 22nd, 1916, bequeathing to the University the residue of his estate, subject to certain life-rents, with the instruction that the income thereof should be applied "for the advancement of the work of the medical side of the University in such manner and subject to such regulations as the Senatus Academicus of the same University may from time to time determine and think fit." Dr. Carmichael was a native of Mary Culter and a graduate in arts and in medicine of Aberdeen University.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

Manifestations of Serum Disease which may Follow Intrathecal Injections.

A MEETING of this section was held on Nov. 27th, Surgeon-General H. D. ROLLESTON, R.N., the Vice-President, being in the chair, when short papers were read on the Manifestations of Serum Disease which may Follow Intrathecal Injections. Surgeon-General ROLLESTON'S paper appears in full on p. 821 and Dr. CLAUDE KER'S on p. 822.

Lieutenant-Colonel E. W. GOODALL said that prodromal fever had been noticed after the subcutaneous injection of serum. Fever did occur without a rash and one manifestation might be a temperature without irruption. The proportion of rashes varied with the serum used. No doubt, if the patients who died during the latent period were excluded, 40 per cent. of the remainder would have had rashes. The severity of serum sickness was not nearly as bad as when serum was first introduced.

Dr. J. D. ROLLESTON thought that the severity of the rashes was determined by the size of the dose and varied indirectly to the severity of the attack.

Major C. R. BOX drew attention to the absence of rashes when precipitated antitoxin was used. Numbers of men in the Army had been injected with tetanus antitoxin, and might get cerebro-spinal fever later. What was the likelihood of their getting anaphylaxis? He thought that the percentage of rashes might be linked up with the amount of foreign protein given. Figures from two General Hospitals showed that the rashes only amounted to frem 2 per cent. to 5 per cent. of the cases injected, and might be due to the small amount of protein administered as the unitage was high.

Lieutenant-Colonel GOODALL said that the strength of unitage had gone up, but the volume to be injected had gone up also. Many soldiers had frequent injections of antitoxin, but the number who got anaphylaxis was very small.

Dr. R. A. O'BRIAN also spoke, and Surgeon-General ROLLESTON briefly replied.

SECTION OF OTOLOGY.

Exhibition of Cases and Specimens.—Gastro-intestinal Sepsis a Cause of Ménière's Symptoms.

A MEETING of this section was held on Nov. 16th, Dr. H. J. BANKS DAVIS, the President, being in the chair.

On the proposition of Mr. HERBERT TILLEY, seconded by Dr. WILLIAM HILL, a cordial vote of thanks was accorded to Mr. H. J. MARRIAGE, the retiring President.

The new PRESIDENT, in the course of an address, reminded members of the section, who were all specialists, that its proceedings were widely read by medical men who might not have the same opportunities as they themselves had for acquiring a special knowledge of otology. He said that because there was a tendency to report upon and exhibit at these meetings only cases of rare or special interest which might exclude much information concerning types of cases commonly met with. The experience of all was worth recording, though everybody's opinions might not be. He regarded it as a duty of the section to promote knowledge among the general body of the profession. The subject of special debate for the winter would be "The Influence of Abnormalities and Diseases of the Nose on the Ear," a topic which had an important bearing on aviation, as flying men with nasal obstruction were liable to be handicapped by disturbances of equilibration when flying. In a minor degree this applied also to gunners in the naval and military services. Other aspects of the specialty calling for further investigation included the best after-treatment following operations on the mastoid, the best treatment for shortening the duration of Eustachian catarrh with simple catarrhal otitis media (a common condition during the war), the alleviation of the symptoms of otosclerosis, how these can be distinguished from those of chronic adhesive catarrh, and tinnitus, "the bugbear of otology."

The PRESIDENT showed a green pea which he had extracted from the middle ear of a boy aged 10 years. Examination of the ear in the casualty department revealed nothing, but as facial paralysis supervened the patient was admitted into the hospital, and Dr. Davis, by the post-aural operation, extracted the pea, with husk complete, which had swollen to the size of a hazel nut.

Mr. E. D. D. DAVIS showed a case of war injury to the ear, due to a shell wound of the left malar region, which also destroyed the sight of the left eye. Granulation tissue was present in the left external auditory meatus and a healing perforation of the posterior inferior quadrant of the drum. The loss of hearing was considerable and likely to be permanent. He did not think the deafness was functional.—Dr. PERRY GOLDSMITH considered there was a functional element in the case, as he could not understand why a wound in the position mentioned should have destroyed the man's drum.

Mr. SOMERVILLE HASTINGS showed a case of cholesteatoma which exposed the lateral sinus. The patient, a woman aged 33, seen last July, gave a history of chronic discharge from the right ear for eight years, and pain in this ear during the last few weeks. She had never had an operation on the ears. The right ear was filled with pus and epithelial débris, and removal of this disclosed a large smooth-walled cavity, all trace of the membrana tympani and ossicles being lost. The lateral sinus was exposed for half an inch and could be seen pulsating. Hearing in this ear was very defective. There was no need to operate here, as Nature had operated.—Dr. HILL drew attention to the fact that sometimes the lateral sinus was situated in a forward position, a possibility which surgeons should have in mind during ear operations.—The case was fully discussed.

Mr. W. M. MOLLISON showed a man, aged 21 years, with complete deafness and almost complete loss of labyrinth function.—Mr. J. F. O'MALLEY, suspecting the case to be functional, detailed the plan which he had successfully followed in detecting and curing such conditions.—Mr. SYDNEY SCOTT mentioned the means carried out at the National Hospital for the Paralysed with the same object.

Major E. B. WAGGETT sent a short contribution on a case of Myasis of the Ear. It was due to the flesh-fly, *Sarcophaga carnaria*, specimens of which accompanied the paper.

Mr. T. MARK HOVELL read a paper on Gastro-intestinal Sepsis a cause of Ménière's Symptoms. He said that outside the ranks of otologists there was a tendency for patients suffering from the group of symptoms which Ménière described to be regarded as having incurable ear disease. The paper dealt only with cases in which patients had middle-ear disease and in whom the reason of the symptoms was not apparent. Many of the patients benefited had the following conditions present when first seen: furred tongue, congested pharynx, naso-pharyngeal catarrh, hypertrophic rhinitis, flatulence, frequently considerable distension, constipation. The blood pressure was usually high, sometimes the heart was dilated, and the Eustachian tubes were in most cases closed. Considering the high blood pressure, the presence of tinnitus and giddiness was not to be wondered at. He had directed his attention to remedying the gastro-intestinal condition, to obtaining specimens of stomach contents during fasting, and the preparation therefrom of a vaccine as adjuncts to treatment. No measures for reducing blood pressure would succeed unless the intestinal tract were restored to a healthy condition, towards which the giving of full doses of castor oil was a great help. Locally, the injection of air into the tympanum lessened the Eustachian distress, but for permanently restoring the patency of those tubes the best measure he knew was the injection into them through a catheter of a few drops of collosol argentum, which should reach the tube in the form of a spray. To lessen the naso-pharyngeal catarrh, collosol argentum, or collosol iodine was useful, sprayed directly backwards through the nostril. The first of these remedies he had also found useful for relieving earache. Collosol preparations should not be given in conjunction with arsenic, as poisoning might ensue.—The paper was discussed at length.

The report of the Committee of Otological Research was presented to the meeting, and the members of the committee—Mr. Marriage, Mr. E. D. D. Davis, Mr. Somerville Hastings, Dr. Fraser, Dr. A. Gray, Mr. Hugh Jones, Sir William Milligan, and Mr. Sydney Scott—were cordially thanked for their labours.

MEDICAL SOCIETY OF LONDON.

Resumed Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis.

A MEETING of this society was held on Nov. 26th, Sir STCLAIR THOMSON, the President, being in the chair, when the discussion on the above subject was resumed.

Dr. W. CAMAC WILKINSON said he thought sanatoria indispensable in the treatment of certain forms of tuberculosis, but the present system could not touch the fringe of the disease, for in those classes who could not pay for their own treatment, including, after the war, soldiers and dependents, there would be 300,000 victims. There were 11,000 beds in sanatoria, and all authorities now admitted that each case needed, on an average, six months' residence. Thus there would be room for 20,000 every year. This meant that 6·6 per cent. of these victims could have treatment in one year and 50 per cent. of these were dead in 3 to 4 years, so that benefit was chiefly limited to 3·3 per cent. of the total. Thus, 93·3 per cent. of the cases needing treatment could not enter a sanatorium for at least a year. In other words, 20,000 cases are treated and 280,000 are left out, and the problem should not be discussed as affecting only a small portion of the victims. The pecuniary loss to the nation from prolonged residence in sanatoria was, he said, from £2,500,000 to £4,500 000 every year. The alternative scheme which he advocated was in full working order in Sydney, and tables showed the efficacy and economy. Every remedy which could increase the value of sanatorium measures or diminish their limitations should be discussed, and he knew of none which yielded such satisfactory results as the specific remedy called tuberculin, but it must be used according to the approved method which had secured these results.

Dr. G. A. CRACE-CALVERT thought that statistics suffered because the patients who had gained permanent benefit did not report again to the sanatorium, and that sanatorium treatment should be given before home treatment. Sanatoria were of value because a patient came under the care of a physician who could advise him on all conditions of his life, which he could be taught to regulate, while the moral and educational effects were useful. The majority obtained quiescence of the disease, which might go on to arrest. The unsuitable cases were the acute, auto inoculations, alcoholics, and patients of the flabby type. Three months was the least which should be spent in a sanatorium, and he advocated the starting of colonies along the lines of the Cambridge After-Care Colony.[1]

Dr. HENRY ELLIS said that sanatoria, from a national point of view, were a failure; the number of beds was increased to 11,000 without a drop in the death-rate; but from the point of view of the individual they were of enormous value. Sanatorium figures were very unsatisfactory, as they were limited to cases showing tubercle bacilli in the sputum, cases not being counted until there was tissue destruction. Sanatoria were most valuable in early cases, least valuable in bad cases. There should be separate sanatoria for each class. Lighter treatment was required along the lines of the convalescent home, for even a short time away from work would improve enormously the condition of the tuberculous. Australian figures showed that the mortality among the independent classes was greater than among the working classes. In this country more than 50 per cent. of patients died within six months of notification. We were not scientific where tuberculosis was concerned, he pointed out, for while we knew that sanatorium treatment was good for early tuberculosis and we eliminated early tuberculosis from our statistics; we knew that delay in sanatorium treatment was fatal to success, yet we had waiting lists; we knew that a man's environment, by lowering his resistance, produced the disease, but we did nothing to make his environment better; we knew that early recognition was the keystone of success, but were we doing anything to investigate how early recognition might be made more simple and certain?

Dr. JANE WALKER thought that the results of sanatorium treatment were disappointing if regarded solely from the physical point of view, but the social and educational factor was of great value. A poor patient for the first time in his life had time to learn how to think and live and use his leisure time. The treatment of tuberculosis in children was very important. Infection occurred at a very early age, previous history could be obtained more easily, and tuberculous children were much more intelligent than others. Boarding schools for working-class children were urgently required, especially when these children were delicate. Working-class patients should return to their previous work, as in this way much of their anxiety was relieved. Means for treatment of surgical tuberculosis in adults was much needed.

Dr. HECTOR MACKENZIE said that it was impossible to decide whether any particular case of consumption was curable or not. The sanatorium was only one means for attacking the problem and was designed for hopeful cases, but there was need for permanent institutions for the incurable advanced cases and for the dying.

Dr. A. NEVIN ROBERTSON said that the sanatorium was the best method of raising resistance which we had at present. The limitations were financial, patients not having enough money to get treatment for a sufficient length of time. Of 1141 patients who had been in Benenden Sanatorium from 1907 to 1914, 36 per cent. were on full work, 3 per cent. on partial work, 11 per cent. on no work, 41 per cent. were dead, and 6 per cent. were readmitted. Of 563 cases traced at the end of 1914 who had left in the years 1907–11, 20 per cent. were on full work, 2 per cent. on partial work, 2 per cent. on no work, 63 per cent. were dead, and 12 per cent. had been readmitted. He thought the results in early cases were often permanent. Bad housing was only one factor in causing lowered resistance, which followed alcoholism, syphilis, overwork, dissipation, poverty, and lack of food. The *value* of sanatorium treatment depended upon discipline and healthy environment. For the prevention of the disease we must have thorough education of the people in the laws of health, and remove the conditions of bad environment. Early diagnosis and treatment and isolation of infective cases from beginning to end of the disease were required.

Dr. D. J. CHOWRY-MUTHU said that we must decide whether tuberculosis was a social or infectious disease. If it were an infectious disease every measure of inoculation and injection and internal administration of antiseptics would be legitimate and essential. But while believing in infection we could not consistently swing round and attack poverty, alcohol, bad housing, low wages, and other social evils. He was convinced that consumption was more a product of vicious environment than of infection. From a study of the mortality rate of phthisis in England and Wales for 40 years from 1875 to 1915 it happened that during the last 20 years (1895 to 1915), in spite of active propaganda and great efforts to destroy infection, the rate of mortality had not declined so much as in the previous 20 years when no such efforts were made. On the other hand, the fact that improved well-being of the people had been the means of reducing the mortality of phthisis was a proof that it was more a social and economic disease. The success of sanatorium treatment supported this, for the provision of fresh air, food and rest, and healthy environment had brought about cure or arrest in many cases. Its value depended among other things upon the nature of cases admitted, the duration of their stay, the discipline among the patients, and the personality of the physician. But sanatorium treatment could not prevent tuberculosis or cure every case. It was the first link and showed the patient how to live the right life. It was for the nation to devise larger and more comprehensive measures, such as farm colonies, industrial settlements, garden cities, &c., to meet the needs of both the disabled soldier and the disabled consumptive.

Dr. JOHN SORLEY thought that undue importance was attached to physical signs in classification. Early cases only were to be sent to sanatoria, but he had patients with cavities doing 70 hours per week, and patients with the disease in an early stage with a few crepitations at an apex going down hill quickly. The death-rate of those who did not avail themselves of sanatorium treatment was 84 per cent. higher than among those who did.

Lord GLENCONNER, President of the National Association for the Prevention of Consumption, said that much progress had been made, not in cure but in investigation, and in care in providing healthy surroundings for our working people. He was favourably impressed by all he had seen in sanatoria. Only the fringe of the problem was touched, but in time to come that margin would become larger.

[1] See THE LANCET, Nov. 24th, p. 779.

Reviews and Notices of Books.

Lord Lister. By Sir RICKMAN JOHN GODLEE, Bart., K.C.V.O. London: Macmillan and Co. 1917. Pp. 676. Price 18*s.* net.

"A SCIENTIST'S public life lies in the work that is his" were Lister's own words in regard to the form in which posterity should think of him. And of no one could this be more truly said than of him who made modern surgery possible, who—in Professor Howard Marsh's words as Bradshaw lecturer—opened the gates of mercy on mankind. Lister's life is therefore written, from his own point of view, in the two stately volumes of Collected Papers published in 1908 by the Clarendon Press, as well as in the work of every surgeon who practises the antiseptic methods which Lister introduced. But it was, nevertheless, inevitable that a generation which no longer knows Lister in the flesh should desire some personal details of a radiant career, and the medical profession as well as a wider public owes Sir Rickman Godlee a debt of gratitude in having provided them with an authoritative biography. As Lister's nephew, who was intimately associated with him in his surgical and experimental work, Sir Rickman Godlee claims certain disabilities as a biographer, but the reader will not be inclined to admit the drawbacks, and will have no difficulty in forming his own judgment in places where the biographer modestly leaves facts to speak for themselves.

Sir Rickman Godlee's account makes it easy now to picture the qualities which enabled Lister to present his message to the world with success. Brought up in a Quaker household, and debarred from entering either of the older Universities, his youth was spent in the practical pursuit of natural history on long country walks, in reading Latin authors with his father, himself a man of no small scientific and artistic attainment, who brought up his family in the conviction that life was a gift to be employed for the honour of God and the benefit of one's neighbour. The microscope which helped to confirm Lister's arduous experimental work was itself improved in several important particulars by his father's optical studies. Lister therefore received his education in a scientific atmosphere of a nature which fitted him for independent thought. He possessed, too, those personal qualities of mind which added force to his teaching: his serenity was absolute, his courtesy unfailing, coupled with a persistence which was neither discouraged by others' neglect of his work nor unduly elated by their notice of it. When he had no other adherents he was happy in the ability to convince his own pupils of the justice of his conclusions. Lister had, too, in a remarkable degree, the courage of his convictions. He trusted his own antiseptic methods and based his practice upon them. At a time when Sir Rickman Godlee was demonstrating in anatomy at University College and expressly forbidden in consequence to enter the surgical wards of the hospital, Lister constantly employed him to assist in operations in his private practice. Qualities such as these enable a man to live down the early opposition which novel and original thought stirs up. Semmelweis, too, showed how infection from the dissecting-room could be met. He observed that the mortality in the Vienna Maternity stood at a greatly higher figure in the wards attended by students than where midwives were employed. The use of chlorinated lime to cleanse the students' hands as they came from the dissecting-room to the women's clinic at once reduced this mortality from 12 to 3 per cent. But Semmelweis found himself unable to impress his views on his own colleagues; his energies were wasted in eternal wrangling, and after years of ridicule and persecution his mind finally became unhinged. Lister, when he visited Budapest in 1885, found that Semmelweis had been forgotten in his own native city.

Besides the picture of Lister himself, Sir Rickman Godlee's book contains an attractive sketch of Victorian medicine at Edinburgh, at Glasgow, and in London. Lister's relations are drawn with such foreign savants as Kölliker and Pasteur. The latter, whom he had long recognised as having furnished the principles upon which alone the antiseptic system could be carried out, he did not actually meet until the year 1881. The scene is graphically described in which, ten years later at the Sorbonne, Lister delivered an oration at the great gathering called to honour the illustrious Frenchman in whose steps he had followed. M. Rixens's picture of the scene is well reproduced, and a number of excellent portraits of Lister and of his near relatives are given. The book is indeed all that a biography should be, and is certain of a great success.

War-shock: the Psychoneuroses in War; Psychology and Treatment. By M. D. EDER, M.R.C.S., L.R.C.P. Lond., B.Sc., late Temporary Captain, R.A.M.C. London: William Heinemann. 1917. Pp. 154. Price 5*s.* net.

THE author was in Malta for many months and has recorded in this book the first hundred consecutive cases of psychoneurosis which came under his care there. From the nature of the circumstances in which he was placed he has been unable to follow up the majority of these cases, so that the reader is not provided with the ultimate result. As far as immediate results are concerned, however, Mr. Eder claims that he obtained "complete cessation of all the symptoms" by "suggestion under hypnotism," and this he calls a "cure." According to his figures the percentage of "cures" thus obtained was most gratifying, and Mr. Eder may be congratulated on the excellence of his results.

Mr. Eder avows himself a follower of Freud and adopts his classification of conversion-hysteria and anxiety-hysteria. He does not use the term neurasthenia, for the reason that he is "unable to find, at any rate in the troubles produced in the war, any clinical entity that corresponds to this term." Neurasthenia has not infrequently suffered dismemberment before this, but as far as we are aware it has never been pruned away to nothing, and we can only suppose Mr. Eder's experience to be unusual. We should add, in fairness, that Mr. Eder regards neurasthenia as the clinical picture, as his master Freud declares, "corresponding to the specific cause of excessive masturbation or frequent pollutions." If this is what the Freudian understands by neurasthenia, it is perhaps not surprising that in the midst of modern warfare Mr. Eder has not come across the condition. In other ways the reader will find material for discussion in these pages, which run along well-marked Freudian lines.

Occasionally in Freudian literature we get the impression of a certain slight air of condescension on the part of the enthusiast in referring to other methods of treatment than his own. While Mr. Eder regards suggestion under hypnotism as the method of election for war-shock in the soldier, he allows himself to say that electrotherapy, massage, and Weir-Mitchell treatment have a "savour of charlatanism." He cannot, however, be ignorant of the fact that results as good as, or even better than, his own have been obtained by the methods he thus alludes to, and this, too, in many instances where hypnotism has failed. He probably knows that, according to the latest opinion of French observers, in exactly the same class of case as has come under his care, "suggestion under hypnotism should be definitely abandoned." The categorical statement is made by Mr. Eder that "the faradic current should not be used in the hysterical mutism of soldiers." Those who have employed it with success in cases that have been hypnotised without result will probably smile at Mr. Eder's veto. In his introductory chapter Mr. Eder refers to "reflex paralysis" as a "new disease" which Oppenheim has described (we owe it, however, to Babinski), and says this new disease "seems but due to his (Oppenheim's) ignorance of contemporary psycho-pathological work." Unfortunately the statement seems but due to Mr. Eder's ignorance of contemporary neurological work.

Encyclopædia Medica. Second edition. Vol. V.: Filix Mas to Heart. London and Edinburgh: W. Green and Son, Limited. 1917. Pp. 766. Price 20*s.* net.

THIS instalment of the great work which Dr. J. W. Ballantyne is editing keeps up the standard of the previous volumes. All the articles which have appeared before have been revised or rewritten, and new articles appear on First Aid, by Dr. H. L. Watson Wemyss; on the Development, Anatomy, and Physiology of the Fœtus, and on Diagnosis in Gynæcology, by the editor; and on Graphic Methods in Examination of the Heart, by Dr. G. Douglas Mathewson. The whole section on the heart occupies 200 pages, and forms an up-to-date summary of cardiac medicine and surgery. There are a few useful coloured plates and a number of illustrations in the text.

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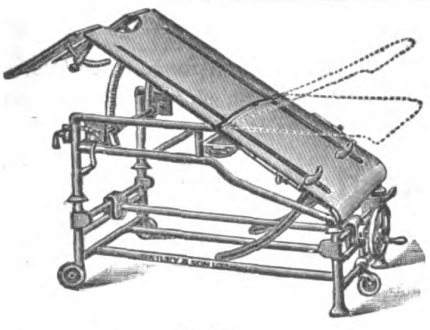
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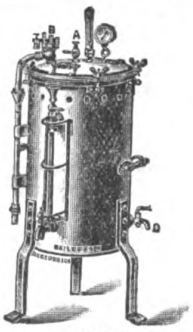
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THE LANCET.

LONDON: SATURDAY, DECEMBER 1, 1917.

The Numerical Position of the Medical Student.

To the General Council of Medical Education and Registration, which commenced its winter sitting on Tuesday last, Sir DONALD MACALISTER, the President, in the course of his address from the chair, made a valuable pronouncement with regard to the numerical position of the medical student. It is, of course, well known that the loss to the medical schools of students who had necessarily joined the Navy and Army deprived the country of men who would in other circumstances have been added to the Medical Register as new practitioners, especially during next year and 1919. We have frequently pointed out that much difference of opinion was manifested at the commencement of the war as to the advisability of using medical students for combatant service, but optimism dictated a policy which, whatever we may think now, had its origin in sound and patriotic reasons. While everybody could see that if all the potential medical men in the country went on combatant service there would sooner or later be a shortage of practitioners, few believed that the effects of the shortage would actually be felt during the war, seeing that few put the duration of hostilities at a longer period than, say, three years. On the other hand, all who thought about the matter at all—and, unfortunately, they were not many in number, even of the medical profession—felt that even a war of two years' duration, if it shut off all recruits from the medical profession, would have an evil outcome. As the medical profession is wanted with equal urgency for civilian and military purposes, and as no medical curriculum can occupy less than five or six years, it was seen by the more provident that while hostilities continued we should get nearer the point when there would be a dangerous diminution in the ranks of medical practitioners.

Sir DONALD MACALISTER, in putting the situation before the highest authorities, has been able to support his words with statistics; and the figures, as he announced them to the General Medical Council, show that in January, 1917, only 572 men and 261 women were in the third year of their medical studies, and could therefore be counted upon as probable accessions to the Medical Register of 1919. This would mean a shortage from the normal of nearly 300 practitioners. The Army Council, on the position being made known to them, directed that students registered prior to August 1st, 1914, who had before enlistment completed two years of the curriculum—i.e., who were students in their third year at least—should be passed out of combatant service to resume medical study. In order to determine the effect of this concession, as well as to dictate further policy, the Minister of National Service has since asked for a census of medical students actually in attendance at the opening of the present session. Accordingly, in October forms were sent out by the Registrar of the General Medical Council to be returned on Nov. 14th, and the figures, so far as they go, are those given to the Council by the President (see page 834). The figures, it will be seen, show that students in their first and second years were largely under 18 years of age in October, 1917. They were accordingly outside the influence of conscription for combatant service; and this fact, of course, is not without significance. Students in their third year in October, 1917, had increased in number, suggesting that the Instruction of the Army Council, quoted above, has had some effect, but the proportionate increase among female students is far larger than it is among male students. Fourth-year male students numbered 709 and females 194, upon which figures Sir DONALD MACALISTER comments with the simple statement that unless all students of this standing are returned from military duties, the supply of new qualified men cannot be maintained in 1919. As, however, the Ministry of National Service has agreed to maintain, if possible, the supply of medical students at a level which should ensure the annual addition of at least 1000 medical practitioners to the Register, it will be necessary to modify the scope of the existing Instruction of the Army Council. Without such modification Sir AUCKLAND GEDDES'S Department cannot keep its provisional promise. This probably is the fact which gave rise not long ago to a statement in a lay paper that all the medical students who were serving in combatant positions in the Army would shortly be demobilised and sent back to their medical schools. No such sweeping policy is possible at the moment. The present Instruction is that students who had begun their curriculum prior to August 1st, 1914, and had at the time of enlistment completed two years' course, may claim to be returned to their studies. It is this Instruction which will probably have to be bettered, similar facilities for taking up their medical curriculum being extended to second-year students.

Sir DONALD MACALISTER referred also to the position in the Royal Navy in connexion with medical students, for with regard to this Service, so far from being able to expect an increase in the number of students who can be relieved from combatant duties and returned to the medical schools, the call is for senior students, who are wanted to discharge medical functions. Third-year students who have passed the examination in anatomy and physiology are able to serve as surgeon probationers in certain capacities in the Navy, and to withhold such young men from the work would only be to make the demand for qualified medical men, already so hard to meet, still more acute. But from Sir DONALD MACALISTER we learn with pleasure that the period of service of these junior officers is only to be six months, and that those six months will count

as part of their curriculum, and will therefore not delay their ultimate qualification. More, their term of work with the Navy may afford them experience that will later be of great value in practice.

The Surgical Complications of the Enteric Fevers.

THE manifestations of enteric fever are for the most part of medical interest, and it is comparatively rarely that the surgeon is called upon to intervene in the treatment; but the wide experience of this disease which the course of time has given us has shown that in every large epidemic there are some cases requiring surgical treatment, and the lecture by Lieutenant-Colonel A. E. WEBB-JOHNSON, reported in the present issue of THE LANCET, gives a lucid account of these surgical complications. The discovery within recent years that enteric, which was only separated from other continued fevers after many years of careful observation, was not one disease, but rather a collection of three diseases resulting from the activities of a group of closely allied organisms, is, of course, of much more medical than surgical importance, but even in connexion with surgery it is not without significance. With regard to general severity and mortality we have learned that the differentiation of the diseases of the enteric group has shown that the paratyphoid forms are of decidedly less severity than the true typhoid form, and it may also be said with certainty that, so far as the surgeon is concerned, there is much less frequency of the need for surgical treatment in paratyphoid than in typhoid itself.

Perforation of the bowel is probably the most important surgical complication, and statistics show that it occurs with decidedly less frequency in the paratyphoid group. Equally remarkable is the influence of inoculation. In those who have not been inoculated perforation occurs with more than six times the frequency which we expect to meet with among the inoculated. Here there is a curious point: in paratyphoid the ulceration tends to involve the large intestine to a much greater extent than in the other form, and that will doubtless account for the fact that in paratyphoid a large percentage of the perforations occur in the large intestine. It is no easy matter to detect perforation; it occurs most commonly during the period when generally the patient is in a semi-conscious condition, so that signs of pain may be entirely absent, and the only indication may be sudden collapse. As to the treatment of perforation there cannot be two opinions. Although the patient is probably not in a condition to invite operation, yet there can be no doubt that to open the abdomen immediately is the only possible course. It is true that patients have survived undoubted perforation without an operation, but the probability of this occurrence in any individual case is extremely small. Still, now and then restrictive peritoneal adhesions may form and wall off the perforated bowel. Unfortunately, the statistics of operation for intestinal perforation are not good, but many cases have been saved, and the hope of the future lies in earlier diagnosis, followed by immediate operation. There is undoubtedly a great risk that the typhoid group of bacilli may attack the liver or the bile-ducts, and as in the enteric fevers the liver has to strain the blood of the portal vein and to separate from it the infective micro-organisms, it is not strange that these germs in their course along the bile-ducts should sometimes attack the walls of the channel, and so give rise to one form or other of inflammation. Cholecystitis is the most important of these and the skill of the surgeon may be invoked to deal with it. The formation of gall-stones has always been somewhat of a mystery, but there is much evidence that micro-organisms have a share in their production, and we may regard it as proved that the typhoid bacilli are in no little degree responsible for the formation of many biliary calculi.

That thrombosis may occur in typhoid is well known, and citrates have often been given internally for its treatment, but Colonel WEBB-JOHNSON tells us that Captain H. F. MARRIS has had wonderful results with the intravenous injection of a weak solution of sodium citrate in normal saline. Bacilluria is common in this group of diseases, and therefore it is not strange that affections of the genito-urinary tract are sometimes seen in the course of typhoid and its allies; and, further, Colonel WEBB-JOHNSON, suggesting that the bacilli may be responsible for some of the cases of urinary stone, urges that urinary calculi should always be examined bacteriologically. The affection of one or both parotid glands is, without doubt, due to the passage of the typhoid organisms through the duct of Stenson; the condition is severe, but as it occurs mainly in those who are in a very low condition it is rather as an indication of the general weakness of the patient that the affection specially deserves notice. The typhoid diseases of joints and of bones, and especially of the spine, are often of serious moment, and the prompt recognition of their nature is highly valuable for treatment. It will thus be evident that the surgical importance of complications of typhoid is great, and that the surgeon is able to give aid in directions that were quite undreamt of by the therapeutists of a few years ago. This is the sort of position that spells progress, which is always indicated when a pathological condition passes from a distinctly surgical or medical sphere into one for common consideration.

THE Third Annual Report of the Medical Research Committee, which has just appeared, is a record of work which is not merely of immediate importance to the naval and military forces, but which, by throwing new light on a number of medical problems, is likely to modify profoundly practice in the future. The Committee welcomes the growing trust in the value of research evinced by the public, and appeals for an increase in the funds available for rapid and effective research work.

Annotations.

"Ne quid nimis."

DR. JAMESON.

Sir Leander Starr Jameson, known to the end of his stirring career as Dr. Jameson, although all the activities which earned him a place in national history were independent of his original career of medicine, died on Nov. 26th at the age of 64, to the deep regret not only of his large circle of personal friends but of the public at large, including that section which during the most prominent part of his life was violently opposed to his policy. The development of South Africa was his life-work, but his early training for a profession which demands accurate observation, strenuous application, and a keen interest in human nature, counted for much of his success in political administration, and in his ability to make a decision and to take a broad-minded view of opponents. Thus it was that his enemies became his friends. Born in Edinburgh in 1853 he was a successful student at University College Hospital, and after qualifying in 1875 as a Member of the Royal College of Surgeons of England and graduating M.B., B.S. at the University of London, he won the gold medal for medical jurisprudence. He obtained the M.D. two years later, and showed every promise of becoming a prominent member of his chosen profession, but his health failing he went to Kimberley, where, in 1878, he entered into medical partnership. His skill and a charm of manner which was operative because it arose out of a natural simplicity and was clearly not assumed with any desire to please, attracted to him British and Dutch patients, and in course of time he met Cecil Rhodes, whose influence dominated his after-life, so that the two names must always be associated in the wonderful developments which have followed British rule in South Africa. On the invitation of Rhodes, in 1888 Jameson undertook a mission to Lobengula, whose gratitude he gained by curing the great chief of gout, thus repeating the course of events which often took place during the spread of British rule in India, when the medical officers of John Company proved over and over again their value as imperial agents. From 1891 to 1895 he acted as Administrator of Rhodesia, and was decorated for his services. The story of his connexion with the South African war, including the celebrated raid and the subsequent trial, need not be dwelt on here, for it is all history; but it was characteristic of Jameson that he never denied his principal responsibility for what happened. During the war, when he was besieged in Ladysmith, he contracted typhoid from his own servant whom he was nursing, and his health in England, while the events of the raid were the subject of trial, and while he was serving the first six months of his sentence, was more than a little anxious. Complete recovery, however, ensued, and he returned to South Africa, and was elected a member of the Cape Legislative Assembly in 1900, becoming, in 1904, Prime Minister for Cape Colony, two years after the death of Rhodes. This position he held for four years. He was made a Privy Councillor in 1907 and a baronet in 1911, and a year later, owing to ill-health, resigned his seat in the Union Parliament and returned to England, succeeding the late Duke of Abercorn as president of the British South Africa Company. Continued ill-health prevented him from taking a very active part in public affairs during later y but as chairman of the Central Prisoners War mittee and as the organiser of private hos abroad he continued to the very end to mai his reputation for strenuous labour in the cau the British Empire. The medical professio every reason to be proud of having supplied t nation, in the person of Dr. Jameson, a citizen and patriot.

ELECTRICALLY HEATED BEDS.

A WARM bed is the most important matte a patient suffering from pneumonia—Sir Duckworth quotes[1] Sir William Gull as sa And in view of the elaborate care with which details of sick nursing have been worked out more than a little curious that the maintenan the patient's warmth in bed should have bee so long to the precarious ministry of the hot-v bottle. If the aim is to maintain an even tem ture it is obvious that any system of intermi heating is very unsuitable for the purpose. W has a high specific heat which, when contained badly conducting envelope, it parts with slowly at best with the rubber bottle the bed tempera is a constantly fluctuating quantity. Various ef have been made to solve the problem by the use continuous electric current passed through suit resistance, but these have failed for the most in not providing for the wear and tear insepa from bed-using and bed-making. A successful tion has now been reached by Mr. H. J. Gauva the Treloar Cripples' Hospital, Alton, where wards are now supplied with electric mattre which have proved both safe and convenien practice even when a child is the occupant of bed. The mattress does not differ in appearance any other except that a flexible wire enters it a head end through a terminal which is flush wit surface and therefore not exposed to injury. resistance wire is insulated by glass bead flexible metallic tubing incorporated in the stance of the mattress. The mattress is different heated and the heating element is so disposed the maximum warmth is generated at the foot less in the middle, and none at all at the head This distribution of heat is maintained in what position the mattress is turned, either from he foot or side to side. The wires are connected a switchboard on the wall at the head of a which contains a variable resistance, so that current can be graduated to any required exten is so arranged that when the current is full o temperature of the bed is raised 25° to 30° F. a that which would obtain apart from the heating this has been found in practice to meet the nee the small cripples, many of whom are fastene splints which do not allow of the close conta the bedclothes. A fuse prevents the passage o current exceeding this amount. Several of usual difficulties have thus been met: the tem ture of the mattress cannot rise to any dang degree, the tubing is so flexible that the mat can be shaken or rolled up, and the resistance is waterproof in the spiral metallic tubing, so no short-circuiting results, even if the mattr wetted. The mattress may be sterilised in ordinary way. The system is equally appli whether the bed be in or out of doors. saving of time at the Cripples' Hospital am to an aggregate of three hours a day in ward where the electric mattress has rep

[1] Some Clinical Aphorisms. London: Spottiswoode, Ball and Co., Limited.

the filling of hot-water bottles, while inasmuch as the current required for maximum heating is only half an ampère at 110 volts, the total expenditure of energy for 200 or more beds would be by no means prohibitive. We believe that the general adoption of a similar appliance in hospitals and infirmaries would save much time and relieve the nursing staff of a tiresome routine. Electrically heated beds have already been found of advantage in the treatment of shock at field hospitals, and for military purposes it will be seen that the current required may be instantly supplied from a portable dynamo driven by a motor lorry or car attached to a field hospital. This is of especial importance in circumstances where water for hot-water bottles is not readily available and the means of heating the water required is limited.

THE DEATH OF DR. ELSIE M. INGLIS.

WE deeply regret to record the death, in her fifty-third year, of Dr. Elsie M. Inglis at the English port whither she had just returned from Rumania. Born in India, educated at Hobart and Edinburgh, she was, when war broke out, joint surgeon and gynæcologist to the Edinburgh Hospital for Women and Children, but gave up her post to organise, with indomitable spirit, the Scottish Women's Hospital Units, which have relieved untold misery in France, Serbia, Corsica, Salonica, Rumania, and Russia. Her wonderful work is a story of medical administration under circumstances of supreme difficulty, and when it comes to be told in full she will be recognised by all as one of the bravest among the many heroines and heroes whom the world catastrophe has called from private life to glorious patriotic endeavour.

THE TRANSMISSION OF PLAGUE BY BED-BUGS.

THE possibility of the transmission of plague by bed-bugs has long been recognised by experts. There is also no doubt that these insects can give rise indirectly to the disease, as, for example, when a bug has fed on a human case of septicæmic plague and has afterwards been intentionally or accidentally squashed; the contents of its stomach containing the *Bacillus pestis* may, through an abrasion of the skin of the person touching the squashed insect or its stomach contents, infect that individual. Some interesting experiments and observations upon the subject have lately been carried out by Lieutenant-Colonel J. W. Cornwall, I.M.S., and Assistant Surgeon T. Kesava Menon, I.M.S., of the Pasteur Institute of Southern India, Coonoor, and published in a recent number of the *Indian Journal of Medical Research*. These investigators held the opinion that there was no reason why bugs should not infect themselves from human beings suffering from septicæmic plague, and that if these insects ever feed upon rats or mice they could equally well infect themselves from these animals. During the inquiry it was found that while some bugs allowed to feed on a septicæmic plague case die in a few days from the infection, others may survive as long as 38 days and the plague bacillus may be recovered from their stomachs by culture at the end of that time. Bugs, therefore, which have fed on a patient with septicæmic plague are to be regarded as a potential source of danger. The experiments showed, too, that bed-bugs cannot regurgitate, like the fleas, the contents of their stomachs in the act of feeding; so that if they ever transmit plague by biting, they must do so by washing out with their saliva the plague bacilli which may have been stranded in their sucking tube. But these bacilli are not likely to remain in the sucking tube for long after an infected feed. It cannot, then, be said for certain as yet whether bugs can, or cannot, transmit plague by biting. It is satisfactory, however, to find that the conclusion arrived at by the above-mentioned investigators is to the effect that there is small likelihood that human plague is transmitted by bugs biting under natural conditions.

THE MUNITION WORKERS' FOOD.

THE Health of Munition Workers Committee has submitted a report prepared by Dr. Leonard E. Hill, F.R.S., on a thorough inquiry into workers' food, together with some suggestions as to dietary. Captain M. Greenwood, R.A.M.C., helped in the investigation, and the Committee consider that the new material now presented is likely to prove of substantial value in connexion with practical problems. In the introductory paragraphs of the report a general survey is given of the body's necessities in regard to food. The results of the inquiry follow. In order to determine the kinds of dietaries provided for munition workers specimen meals were obtained, by personal visit or otherwise, from a number of canteens attached to munition works and, to serve as a contrast, from other sources as well. The amounts of protein, fat, and carbohydrate were estimated and the calorie value calculated. The investigation was thus carried out on the actual conditions of practice. The results obtained showed that the average canteen dinner is a good one, containing, as it should, an energy value of about 1000 calories, well distributed among the amounts of protein, fat, and carbohydrate. Apart from calorie value, an inspection of the dinners showed that meat, vegetables, and puddings were made of good materials and well cooked. For the relief of monotony, which is pointed out as an important factor in connexion with industrial canteens, a change of surroundings during the meal and a short walk before partaking it are held to be desirable. On this account, and also on account of the importance of ventilating the workshops so that the air may be fresh when the workers return, it is recommended that the custom of eating meals within the workshops should be discontinued, and that all food should be taken either in a canteen or restaurant, in the open air, or, at least, away from the ordinary place of work. The next subject investigated was the nature and energy value of meals brought by workers from their own homes. The workers from whom meals for analysis were obtained were not asked beforehand to bring a sample meal, but were interrogated at the entrance gate, and asked to exchange the contents of their dinner basket for a sum ample to buy a meal at the canteen. The results showed that a meal of rabbit and vegetables in a basin brought from home by a man on night shift, gave a total energy value of 683·4 calories. In another instance the meal, consisting of sausage roll, bread and butter, and ham and cheese, gave 1448 calories; while a meal brought from home by a boy, consisting of a dish of potatoes, tomatoes, and bacon, jam puff, a cake, bread, butter and jam, equalled 1719 calories value. As is pointed out, the boy's meal with its 1719 calories as contrasted with the 1346 of the canteen meal or with the 1448 of the man, illustrates the effect of growth and work in pro-

ducing appetite, but even so, the variations are probably excessive. The dietaries of women workers were next examined, when the results varied. In the case of one restaurant the meal was a sensible one and supplied at small cost. In another restaurant was found an example of "the unsatisfying meals which pale-faced young women may often be seen consuming in popular cafés." Recommendations are made to bring the canteen meal for women workers up to between 500 and 700 calories value. It was found that the food brought from home by girls varied greatly in nutritive value—namely, from 295 to 1143 calories. While the latter is sufficient without anything from the canteen, the former is not regarded as enough even if a double helping of pudding were added. The dietaries provided at the hostels, required on account of the inadequacy of pre-existing accommodation for housing the suddenly increased personnel of certain large munition factories, showed that the requirements of factory workers were met, unless very heavy work is being done. In some cases the calorie values might be reduced, as when there are facilities for getting extra food for those who want more. A useful table is given setting out the energy values of foods which may replace, or be substituted for, the foods contained in the ordinary dietaries. The report is a valuable one and eminently practical in character. It is pointed out that the nation is working harder than before the war. There are 4½ million women now at work, and elderly men have come back to occupation. Many children are also working, and all round the nation's need for food has considerably increased. One important conclusion in the report will receive general endorsement; it is that the immediate remedy for a threatened scarcity lies not in a reduction of food needed for the performance of work, but in a saving of all waste, a complete utilisation of all food fit for human consumption, an increase in the home production of food, and so an extension of the food-supply. Dr. Benjamin Moore, F.R.S., gave valuable assistance in the inquiry and Mr. A. Webster carried out numerous analyses.

MEASLES CONSIDERED AS A RESPIRATORY DISEASE.

IN later numbers of the *Military Surgeon* (Washington, D.C., U.S.A.) Lieutenant-Colonel E. L. Munson completes his case for regarding measles from a military point of view as a respiratory disease with a rash as a sequela. He bases his view on the story[1] of an outbreak of 443 cases of measles which occurred last spring at Camp Wilson, San Antonio, Texas, in a division of 13,773 men. 136 cases per 1000 occurred among the 2400 men of two regiments who neglected the prophylactic measures he prescribed for them, while the 11,000 men who obeyed had only 10 cases per 1000. Colonel Munson directed his measures of prophylaxis as against an acute respiratory disorder, infectious during the four days following invasion and with an incubation-period of 10 to 14 days. In January there were already in camp many cases of respiratory disease, bronchitis and the like. To prevent these he ordered better ventilation of tents, and the sunning and airing of bedding. In those regiments which carried out these divisional orders respiratory disease fell to a minimum, and when the measles infection, which had been threatening the camp from San Antonio, actu arrived, it had the less chance to spread, pa cularly as all cases of catarrh with pyrexia, th that complained as well as those that were covered by search, were isolated till the rash appea (98 cases) or until, after four days, it was evic they were not cases of measles. When a case diagnosed as measles all the other men of that were sent to the quarantine camp with their t bedding, and other belongings for disinfection isolation; 74 cases did actually appear among th contacts. Regiments which carried out these orc escaped the epidemic. A great deal, Colonel Mun contends, depends on the personality of the c manding officer. He cites as an instance an artil unit which on Jan. 16th had a sick rate of 7·9 cent. On the 17th its colonel returned from months' leave. He at once insisted that sani regulations were enforced as prescribed, and in weeks' time his unit's sick list was reduced one-fifth, or 1·5 per cent., while in the same pe the sickness-rate in the careless regiments trebled. In the latter the captains of unheal companies were noted to be officers of little milit credit. In fact, the whole history of this epide enforces the conclusion of the reporter—that health of an army is a function and a test of military discipline. Colonel Munson's report sho be read by all military medical officers and may of help to sanitary authorities in the managem of measles epidemics.

[1] THE LANCET, 1917, ii., 88.

THE METROPOLITAN WATER-SUPPLY.

THERE were fluctuations in rainfall over Thames basin during the three months J August, and September, the fall being 1·93 of inch above the average mean rainfall during previous 34 years in July, 3·18 inches in Aug and 0·08 of an inch in September. In July results of the chemical examination showed all three raw river waters improved in quality, in August, with a comparatively big rainfall, th was a general deterioration in chemical qua while matters improved again in Septem Bacteriological results in July showed that raw waters contained fewer bacteria than th respective averages for the year 1916, and the s result is reported for August and September. filtered waters in all three months gave, gener speaking, not unsatisfactory results. In J whereas 99·9, 77·1, and 63·6 of the samples of Thames, Lee, and New River water respecti contained typical *B. coli* in one cubic centimetr water, 78·1, 72·7, and 84·5 per cent. of the filte water samples derived from the Thames, Lee, New River respectively contained no typical *B.* in 100 times as much water examined. In Aug 99·8, 100·0, and 80·9 per cent. of the samples of Thames, Lee, and New River water respecti contained typical *B. coli* in one cubic centimetr water, while 60·8, 66·7, and 61·9 per cent. of filtered water samples respectively from Thames, Lee, and New River contained *B. coli* in 100 cubic centimetres of the water. September, whereas 95·0, 89·4, and 40 per cent. of samples of raw river waters contained typical in one cubic centimetre examined, 68·3, 60·0, 80 per cent. of the filtered waters contained typical *B. coli* in 100 times as much water examin The importance of the efficiency of the filtrat and other purifying processes at our great wa works is again illustrated, and the result i practically sterile supply.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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TUESDAY, NOV. 27TH.

THE General Medical Council commenced its winter session at its offices, Hallam-street, W., Sir DONALD MACALISTER, the President, being in the chair.

New Members.

The following new members took their seats: Mr. MEREDITH TOWNSEND, M.R.C.S., L.S.A. (as representative of the Society of Apothecaries of London for one year), and Lieutenant-Colonel HARRY GILBERT BARLING, C.B., F.R.C.S. (as representative of the University of Birmingham for five years).

Presidential Address.

Sir DONALD MACALISTER commenced his address by regretting the resignation from the Council of Dr. Robert Saundby, whose place had been taken by Lieutenant-Colonel Gilbert Barling, and of Dr. George Wilks, who had been succeeded by Mr. Meredith Townsend; and by expressing sympathy with Dr. John McVail, the present Crown member for Scotland, on the death of his distinguished brother, Sir David C. McVail, who five years ago had occupied the same position on the Council for 20 years. He then pointed out that the medical duties of the Army Recruiting Department had now been transferred to the Minister of National Service, where the new Minister, Sir Auckland Geddes, himself a medical practitioner, was assisted by a Medical Advisory Board. The Ministry further, through coöperation with the Statutory Professional Committees in England and Scotland, came into connexion with the Local Medical War Committees, so that an organisation, he said, now existed which was designed to meet fairly the distribution of medical service between military and civilian needs. He continued:—

In several of my addresses since the war began, I have expressed the conviction that the withdrawal of students from the medical schools for combatant service would deprive the country of the necessary quota of new practitioners in the years 1918 and 1919. I have continued to press this conviction on the authorities, and have been enabled to support my view by the aid of statistics courteously furnished for the information of your Emergency Committee and of the Government by the Deans of medical faculties and schools. You will remember that in January, 1917, a census of students actually engaged in professional study showed that in the third year of the curriculum we could count only on 572 men and 261 women to provide in 1919 for the necessary accession of new practitioners to the Register. In normal times this accession should number about 1100. Only by returning third-year students then on active service could the deficiency be made good. In September the Army Council, by an instruction subsequently amended in one point, directed that students registered prior to August 1st, 1914, who had before enlistment completed two years of the curriculum, should be passed out of combatant service to resume medical study and proceed to qualification.

In order to determine the effect of this instruction, and to provide data for further action if necessary, the Minister of National Service requested that a fresh census of medical students in actual attendance during October, 1917, should be taken. The forms sent out by the Registrar were returnable on Nov. 14th, and nearly all have now been received. So far as they go they show the following aggregate results, as compared with those of January, 1917:—

1917		Men.	Women.	Total.
First-year students...	Jan.	1449	674	2123
	Oct.	*1386*	*764*	*2150*
Second-year students	Jan.	987	472	1459
	Oct.	*871*	*642*	*1513*
Third-year students...	Jan.	572	261	833
	Oct.	*805*	*482*	*1287*
Fourth-year students	Jan.	851	164	1015
	Oct.	*709*	*194*	*903*
Final-year students...	Jan.	1088	164	1252
	Oct.	*995*	*200*	*1195*

Of the men students of the first and second years over 820 were under 18 years of age in October, 1917, and about 180 are from places outside the United Kingdom. The third-year men students (who last year numbered some 520) have increased by about 230, and the women students by about 220. The fourth-year men numbered 709 and the women 194. Unless therefore all students of this standing are returned from service with the Navy or the Army, the supply of new men, duly qualified for the medical service of the country, cannot be maintained in 1919.

In the meantime the Minister has declared his intention to provide, if possible, that the supply of students in training shall be maintained at a level sufficient to ensure the annual accession of at least 1000 new medical practitioners to the Register. To effect this purpose it will almost certainly be necessary to extend the scope of the Army Council's instruction of September, either by relaxing its restriction to students registered prior to August 1st, 1914, or by including second-year students who on enlistment were sufficiently advanced in their studies to compass the Second Professional Examination within a few months.

On the other hand, the Admiralty makes an urgent demand for capable third-year students who have passed the professional examination in anatomy and physiology, and are able to render aid as surgeon probationers in the minor units of the Navy. To withhold these from their studies for an indefinite period of service would unduly postpone the date of their full qualification as practitioners, and would proportionately diminish the number annually added to the Register. The Medical Director-General of the Navy has accordingly arranged with the Ministry of National Service that the period of service of surgeon probationers shall not be longer than six months at home or 12 months abroad. The functions of a surgeon probationer being comparable with those of a surgical dresser or student assistant in surgical wards, licensing bodies generally have agreed to accept his surgical service afloat as equivalent to six months of the hospital attendance prescribed for the *minimum* curriculum. The Admiralty arrangement should therefore ensure that most of the surgeon probationers will return and qualify within the normal period; and in the meanwhile they will have gained experience relevant to their profession, which may hereafter stand to their advantage as practitioners.

The claims of the Army for fresh drafts from the civilian members of the medical profession continue, though it has become a serious problem how the claims are to be met. A War Office Committee, which included members of the Medical Council, visited the Western front during the summer for the purpose of discovering what economies in personnel, if any, might be made in the Medical Corps. Its report is not yet issued; but it is questionable whether any practicable economy can be commensurate with the continuous wastage due to the incidents of warfare. The devotion and success of the Medical Corps in preserving and restoring the health of our troops have been recognised in the warmest terms by the highest authorities; but the service is rendered at a heavy cost in sacrifice. The Registrar informs me that on almost every page of the Medical Register he has had some military distinction to insert. But too often, after making the insertion he has had to remove the bearer's name as having "died on service." In the three years 1911–13, the average number of names annually removed from the Register "on evidence of death" was 620. In the year 1916 the number rose to 983. In the current year it will probably not be less.

The welcome coöperation of the United States of America, in sending over medical units in advance of its troops, has afforded the Allies some relief in this respect. Officers of the American Medical Service have accepted honorary or other temporary positions in hospitals at home and abroad, and have thus released British officers and practitioners for other work. But we shall not be able to count on this help after the arrival in Europe of the American forces in full strength. And, again, we cannot count on American civilian practitioners to furnish many accessions to our Register. In the absence of American Federation legislation authorising professional reciprocity between the United States and Britain, His Majesty in Council is debarred from applying the Medical Act, 1886, to the United States, and this Council has accordingly no power to admit American medical practitioners to the Register unless they pass a recognised examination in medicine, surgery, and midwifery, and so acquire a professional title registrable in this country. Where such legislation, within or without the Empire, has been accomplished, the Council has not failed to give it effect. Already the Foreign and Colonial List of the Register include over 1000 practitioners, and their legal status in regard to practice is the same as our own.

Sir DONALD MACALISTER then alluded to the public advantages which have accrued from the Midwives Act for England and Scotland, which have led to a similar measure having been proposed for Ireland; and to the working of the Venereal Diseases Act, 1917, which is now operative in some 40 English counties and boroughs. He mentioned that a Dental Service Committee, with a Subcommittee for Scotland, had now been set up to regulate the calls on the dental profession, both military and civilian, and referred at some length to the Special Committee appointed by the Lord President of the Privy Council to enquire into the questions raised by the Council's recent memorandum on the Dentists Act. The wide terms of reference of this committee include an investigation into the causes of the shortage of qualified dentists, the expediency of prohibiting unqualified dental practice, and the practicability of lessening, without impairment of efficiency, the time and the fees that have now to be expended to secure qualification. On these points, he said, his evidence and that of Sir Bertram Windle, and Mr. Harper, the Council's solicitor, had been received in a manner which sufficiently showed that the Special Committee was alive to the importance of the questions involved. After alluding to the modifications in the British Pharmacopœia which had been made in order to reduce the consumption of sugar and glycerine, he continued:—

In August the English Board of Education published a scheme which has long been under consideration, for the establishment of a Secondary Schools Examination Council. It will include representatives of the English Universities and of the managers and teachers of State-aided schools throughout the country. It is designed to supervise the working of a system of leaving certificates for pupils under instruction in schools providing secondary education analogous to the system in operation in Scotland. The certificates are to be of two grades, one suitable for pupils of 16, and qualifying, if obtained "with credit," for admission to universities; and another, suitable for pupils of 18 who have undergone a full secondary course. In each grade the syllabus of instruction at the school, and the school record of the pupil, will be taken into account. When the scheme comes into effect it should practically solve the difficulties of the Council in regard to preliminary examinations, and by a method of which the Council has more than once expressed its hearty approval. At my request Dr. Norman Moore and Sir Francis Champneys have represented the Council in conference on the new arrangements with Mr. Fisher, the President of the Board of Education.

nd I desire to thank them in your name for their efficient service.
understand from Dr. Mackay that a report will be offered by he Education Committee on this important subject You will probably gree that it would be proper to await the actual introduction of the ew scheme before resuming our discussion of the present system of ultiple preliminary examinations. The proposed leaving certificate ay, and I trust it will, supersede these examinations in England ltogether, and afford a single guarantee of sound general education hich the Council may safely accept as qualifying for entrance on a rofessional course in this country.

Sir DONALD MACALISTER also called attention to the easons for believing that the present shortage of medical ien had induced unqualified persons to assume professional itles or personate qualified practitioners, in which cases he aid the Registrar was ready to examine carefully the claims ade. With regard to the cases calling for judicial inquiry uring the present session, he made particular reference to regularity of medical certification. Instructions had been sued, he said, to all officials and members of National Service edical Boards that every certificate from a man's private edical attendant was to receive due consideration and e filed for preservation.

Representation of Dentists on the Council.

Mr. THOMSON moved:

That steps be taken to promote legislation to secure the election of irect Representatives of registered dentists upon the General Medical ouncil.

e pointed out that the Council had to deal not only with ental disciplinary cases, but with matters connected with ental education. Dental education was now really under he control of physicians and surgeons. Yet there were ow some 5000 registered dental practitioners. He sug- ested that the time had arrived when they might ttingly be represented on a body which exercised upreme control over their profession. The advice of ien who were actively engaged in the practice of entistry was desirable in dental disciplinary cases, because hey were likely to be more familiar with the difficulties hich beset the honourable practice of their profession owing o the unrestricted position of unregistered practitioners. hey were also well qualified to judge both as regarded the cope and variety of subjects, and the efficiency and experi- nce required to practise their profession without detriment o the public. He was not wedded to the definite terms of is motion, but he did hope that the Council would express is approval of the general principle.

Mr. TOMES seconded, but he thought it was undesirable hat the Council should pass a resolution which very definitely aid how this dental representation was going to be accom- lished.

Sir J. W. MOORE hoped that the motion would be with- rawn. He had always regarded it as a great misfortune hat the profession of dentistry was separated from the eneral practice of medicine and surgery.

Mr. HODSDON, whilst he agreed that the representation of entists in some form or another should be given, thought a etter form of motion might be framed. He suggested that should take this form—

That it would be of advantage to the Council, in administering the entists Act, if provision were made for the appointment to the ouncil, as assessors or members, of representatives of the dental rofession.

Some members considered the employment of the phrase assessors" as liable to give rise to misapprehension. The ords "assessors or" were accordingly excised from the text f Mr. Hodsdon's suggestion, and in that form it was sub- tituted for Mr. Thomson's motion.

This substituted motion, as thus amended, was, after some iscussion, adopted.

Mr. THOMSON: I think the resolution should be sent to he Dental Committee.

The PRESIDENT: It should really be communicated to the rivy Council.

WEDNESDAY NOV. 28TH.

The Council devoted its sitting to the hearing of dis- iplinary charges against practitioners.

THE epidemic of dysentery in Prussia was sensibly iminishing (1864 cases, with 316 deaths) in the second ctober week.

APPEAL FOR THE QUEEN'S HOSPITAL FOR CHILDREN.—An appeal on behalf of the Queen's Hospital for Children, ackney-road, which is in need of £7000 for maintenance urposes by the 31st of December, has been issued by the layors of Bethnal Green, Shoreditch, Stoke Newington, ackney, and the chairman of the hospital. The institution, hich receives children up to 14 years of age, has 170 beds, nd an out-patient attendance of 180,000 annually. It upports also a convalescent home at Bexhill. Contributions hould be sent direct to the secretary, Mr. T. Glenton Kerr, t the hospital, Hackney-road, Bethnal Green, E. 2, cheques eing made payable to "Queen's Hospital" and crossed Barclay's Bank, a/c of Payee."

NATIONAL INSURANCE.

The National Health Insurance Bill.

THE Bill to amend the Acts relating to National Health Insurance does not, to any appreciable extent, affect directly the practice of medical practitioners upon the panels. It is, in fact, concerned with such financial questions as came before the Departmental Committee recently presided over by Sir Gerald Ryan, including the strengthening of the financial position of Friendly Societies, and the adjustment of difficulties due to miscalculation of the incidence of sickness among women, and with the simplification of administration, particularly in matters affecting the societies. It has passed its second reading and no very material alteration of its provisions in committee is to be anticipated.

Clause 20 amends the law with respect to contributors to insurance who are inmates of hospitals, asylums, and other institutions enumerated in Section 12 of the principal Act, enacting a fresh subsection to take the place of Subsection 2. In this clause conditions under which contributions may be made to the institution in which the patient has been treated, from moneys due to him or her, are laid down, the conditions, as before, being such that no profit to any hospital from such a source is to be expected. Clause 31 provides for the application of certain provisions of the Arbitration Act, 1889, by regulations to be made by the Insurance Commissioners, in the case of inquiries as to the desirability of retaining the name of a medical man or pharmaceutical chemist on the list. The provisions referred to affect procedure and costs, and the costs of any such inquiry are taken from the control of the person holding the inquiry and assigned to the Commissioners.

Special provisions are now made with respect to married women, subject to certain specified conditions, by Clause 22, which enacts that "any woman being an insured person and a member of an Approved Society who marries, shall, if she gives to her Approved Society notice of her marriage within one month thereof, and notice of her election in that behalf within six weeks, after the date of her marriage, be entitled, subject to the provisions of this Act, in lieu of the ordinary benefits under Part I. of the principal Act, to receive by way of benefit payment of a sum of 40*s*. (in this Act referred to as 'marriage benefit') and also until the termination of the year next following the year in which she was married, or if she had ceased to be employed within the meaning of Part I. of that Act before being married, until the termination of the year next following the year in which she ceased to be so employed, to receive medical and sanatorium benefit."

Clause 36 amends Section 63 of the principal Act, which provides for inquiries into causes of excessive sickness and matters connected with it by ordering that where such an allegation as is contemplated by Section 63 is made by an Approved Society or Insurance Committee, and no agreement is arrived at with the person or authority concerned, the matter shall be referred to the Insurance Commissioners, but no application shall be made for an inquiry until the Commissioners are satisfied that a *primâ facie* case for such is disclosed. In the same section (63) the inquiry held has for one of its objects the ascertaining whether there has been sickness "in excess of the average expectation of sickness by more than 10 per cent." For the words quoted the following are now substituted: "In excess of the amount of sickness which, in the opinion of the person holding the inquiry, ought, in all the circumstances of the case, to have occurred." The expression in connexion with sickness which admits that it "ought to occur" may strike some as a little strange, and presumably is intended to convey the meaning "might reasonably have been expected to occur."

The fate of funds arising incidentally to the administration of the Act from unexpected sources, such as the neglect of contributors to place themselves in a position to obtain the benefits provided by the Act, is always a matter of interest to the medical profession, as well as to others whose emoluments under the Act have not realised the more sanguine expectations formed by some in the days immediately following its introduction. Certain sums contributed in respect of which "no claim has been made by or on behalf of any Approved Society or any deposit contributor for the crediting of those sums to the society or the Deposit Contributors

Fund" are now to be applied "towards discharging the liabilities of the Insurance Commissioners to Approved Societies in respect of reserve values."

The Insurance Act Pharmaceutical Service.

The National Health Insurance Commissioners have recently sanctioned a small increase in the dispensing fees paid to panel chemists, and, in notifying the Pharmaceutical Society that the Treasury has given its authority to this additional allowance, the Commissioners state that the granting of it is conditional upon a satisfactory and adequate pharmaceutical service being secured for the ensuing year. Were it not for the fact that this proviso with regard to the adequacy of the service is in the nature of a standing formula, it might be inferred that the exigencies of war time had entailed a depreciation in the quality or the promptitude of the pharmaceutical service. But this is not so. The Commissioners are, it is understood, thoroughly satisfied with the way in which panel chemists have fulfilled their contracts. It is true that there have been occasional complaints, but these have been remarkably few, and the majority of them on investigation have been found to be groundless. On the other hand, a minority of the panel chemists have expressed strong dissatisfaction at the rates of remuneration, and there has been talk of "going off the panel" unless these rates were substantially increased. This minority, however, has failed to impress the majority, and when put to the test those of the minority who have had the courage of their convictions have been conspicuous by their rarity. The broad fact remains that the Insurance Commissioners are satisfied with the pharmaceutical service and that the Local Insurance Committees which are in intimate contact with the panel chemists and which have special subcommittees to investigate complaints are also satisfied. This is particularly gratifying in view of the difficult circumstances prevailing; many panel chemists are understaffed, but they, like the rest of the community, have proved themselves capable of putting in more work than they were accustomed to in the old days. Moreover, the prescription frequency has been rather lower and time- and labour-saving devices have not been despised.

It is, of course, admitted that all the general working expenses of pharmacists, quite apart from the colossal advances in the prices of drugs, have increased considerably during the past three years. Notwithstanding this increase panel chemists had been granted, up to the time of the concession already alluded to, only a very small extra allowance for dispensing medicines for insured persons. To be precise, the increase in the fee was 0·3*d.* per prescription. Obviously this was inadequate to meet the situation, and in granting a further addition of 0·45*d.*—to come into force on Jan. 1st, 1918—the Commissioners recognise this. It is estimated that the total sum per annum represented by this extra 0·45*d.* per prescription is about £54,000. Looked at as a whole this is a goodly sum, but apportioned among the whole of the panel chemists in England and Wales—in round figures about 9000—the average share will amount to a comparatively trifling amount, for £6 per head cannot be regarded as a very substantial extra war bonus. But since it is as much as the Commissioners are disposed to grant there is nothing for the panel chemists to do but accept it with the best grace possible.

PANEL RESIGNATIONS IN CHESHIRE.—The Local Medical and Panel Committee of the County Palatine of Chester on Nov. 19th handed in to the Cheshire Insurance Committee 152 resignations from the panel of doctors in Cheshire subject to the following two qualifications:—

1. The signatories are willing to accept service at the capitation rate of 10*s.* per head per annum (exclusive of drugs and appliances), calculated on the list of persons accepted by or assigned to them under Section 25 of Part III. of the Medical Benefit Regulations.
2. Should the Insurance Acts Committee of the British Medical Association, after the negotiations which they are at present conducting with the Commissioners, conclude a settlement satisfactory to the whole profession, then the signatories would be willing to accept that settlement and withdraw their resignations.

In a covering letter the Committee states that it had offered an interview with the Insurance Commissioners with regard to the whole matter, but had been informed by them that Exchequer moneys and the interests of practitioners being involved, the Commissioners were not in a position to treat with individual panel committees.

Correspondence.

"Audi alteram partem."

THE SOURCE OF SPIROCHÆTES IN URINE.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 17th Captain C. P. Symonds, R.A.M.C., suggests that the urinary spirochætes described in our article in THE LANCET of Nov. 3rd might be an accidental contamination derived from the lower urethra or prepuce. Lieutenant James L. Stoddard, M.O.R.C., U.S.A., has shown that spirochætes (not of the *refringens* type) can be found in the urethra of 33 per cent. of cases selected from healthy individuals and hospital patients; this observation would appear to lend colour to the suggestion put forward by Captain Symonds. Since our paper was forwarded to you for publication we have found the spirochæte in a catheter specimen of urine from a case of trench fever. Again, one of our positive cases gave negative urethral scrapings daily over a period of a week.

The fact that a number of apparently healthy persons are affected with a urethral spirochætosis does not necessarily prevent them from developing a renal spirochætosis as well. Would Captain Symonds suggest that the urinary spirochætosis of Weil's disease is of urethral origin? Of 100 cases of Weil's disease some 33 might have a urethral spirochætal infection, but careful search at the right stage of the disease would reveal the existence of urinary spirochætes (*S. icterohæmorrhagica*) in them all. Of our cases of trench fever—with the exception of three which were examined once only—all showed the presence of spirochætes.

We may summarise our reasons for believing that the spirochætes which we have described do not originate in the lower urinary passages as follows: (1) They have been found in a catheter specimen. 2. They appear in the urine when urethral scrapings are negative. 3. They can be found in all cases of trench fever if diligent search be made, and are in only 33 per cent. 4. They are not present in every specimen of trench fever urine—in one of our cases they were present in five samples only ou of 21 examined; had they originated in the urethra or prepuce it is permissible to suppose that they would have been present in every specimen. 5. They are most numerous in the urine about the sixteenth day of illness.

Clinically, trench fever presents features common to protozoal diseases—viz., the periodicity of the pyrexia, the peculiarly intense headache, and the delayed onset of the characteristic limb pains. It is also of interest to note the observation of Moreland McCrea and Carnegie Dickson[1] that the blood in late stages of the disease gives a positive Wassermann reaction.—We are, Sir, yours faithfully,

A. T. NANKIVELL.
C. E. SUNDELL.

Stationary Hospital, B.E.F., Nov. 19th, 1917.

WAR DEAFNESSES.

To the Editor of THE LANCET.

SIR,—In reply to the letter of Dr. Dan McKenzie in your issue of Nov. 17th, I beg to say that I have carried out vestibular tests in many cases of "perceptive deafness," and that I am acquainted with his views as expressed during the discussion on nystagmus.[3] Neither my own experience nor Dr. McKenzie's observations tend to make me in any way modify the opinion expressed in my previous letter. That letter was written to discuss the question whether the presence of vestibular reaction could be used as a diagnostic of hysterical deafness, and my contention is that in this relation it is "not of supreme importance." I am quite ready to admit that its absence would be strong evidence in favour of an organic lesion of the labyrinth, but that aspect of the matter did not call for consideration, if only because the proposition is self-evident.

Let me put this query to Dr. McKenzie: Does he seriously believe that a man deaf from gun-fire who responds more or

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[1] Brit. Med. Jour., Sept. 29th, 1917.
[2] THE LANCET, 1917, i., 796.
[3] Proc. Roy. Soc. Med., Otolog. Sect., April, 1914.

less normally to vestibular tests is either hysterical or malingering? If he does not, I cannot understand why he refers to the views expressed by me. If he does, he undertakes a very serious responsibility, for all of us see many men, deaf as the result of explosions, whose future will depend largely upon the reports furnished by otologists.

It would occupy too much space to criticise Dr. McKenzie's views seriatim, but I may perhaps allow myself one or two remarks. Among his cases are some in which he himself admits organic lesion of the internal ear, and yet vestibular reactions were normal or increased. The occurrence of such instances would, in common justice, negative the assumption that the presence of a normal vestibular reaction is indicative of purely functional trouble. Again, it appears to me that Dr. McKenzie is too prone to assume that deafness is functional. For example, he says, "bearing in mind, however, the fact that hysterical or functional deafness, like any other manifestation of this disorder, is often obstinate and persistent." Now, as I pointed out in my previous letter, hysterical deafness can only be diagnosed with certainty after it has been cured, therefore it cannot be diagnosed with certainty *while it persists*. It may, indeed, be strongly suspected, but can Dr. McKenzie give any other absolute proof? Apart from the presence of a suggestive history or the existence of unmistakable hysteria, can he even give a list of symptoms which would afford very strong reasons for suspicion?

I am, Sir, yours faithfully,

Edinburgh, Nov. 19th, 1917. P. MCBRIDE.

CIRCINATE RASHES AFTER ANTITOXIN.

To the Editor of THE LANCET.

SIR, In an annotation in your issue of Nov. 17th you write: "With the production of an antidiphtheritic serum of high potency the appearance of serum disease, so frequent in the early days of antitoxic treatment, diminished almost to vanishing point." The following figures show the percentage incidence of serum rashes during the treatment of diphtheria in the hospitals of the Metropolitan Asylums Board from 1898 to 1914 inclusive:—

Year.	Percentage incidence of rashes.	Year.	Percentage incidence of rashes.
1898	45·0	1907	25·0
1899	34·5	1908	30·3
1900	42·6	1909	30·3
1901	43·6	1910	30·6
1902	47·4	1911	30·6
1903	44·8	1912	30·1
1904	43·1	1913	31·2
1905	32·8	1914	32·9
1906	30·6		

I believe the actual incidence to be higher than these statistics indicate owing to failure to observe or note all rashes, but they are sufficient to show that, though a drop took place after 1904, serum disease has not "diminished almost to vanishing point."

You describe the rashes 20 years ago as follows: "Exanthem of urticarial type; more rarely rashes occur resembling scarlatina or measles." In a letter I wrote you referring to an article by Captain S. Wyard on anaphylaxis, and which you kindly published in your issue of Jan. 27th last, I drew attention to the circinate erythema as being next in frequency of occurrence to urticaria. In the *British Medical Journal* some 15 years ago, Stanley, I think, stated that the circinate erythema was more common than any other eruption. This has not been so for a number of years, but although the circinate erythema is much less common than the urticaria, it is not uncommon. Captain Wyard, in his letter in your issue of Feb. 10th, said the circinate rash had not come under his observation, but I presume his experience lay amongst adults. At all events, the fact that a circinate rash does occur, and that it is next in frequency, is well known to those experienced in serum disease.

Among those who have not undergone serum treatment previously the days of election for the first appearance of the urticarial rash are the seventh, eighth, and ninth after injection, and it may appear at any time subsequent to the injection up to the fourteenth or fifteenth day, but rarely later. In those who have undergone serum treatment previously the urticarial rash is almost invariably accelerated. It may appear within a very short time, and most commonly does so in about 24 to 48 hours. The circinate erythema occurs from about the tenth to the twentieth day, and is much more common in those who have suffered from a previous urticaria. It is true that continued high temperature does occur rarely, and also diarrhœa, but it has not been my privilege to see serum disease simulate enteric fever.

Anaphylaxis is rare, and I have not yet seen a case follow upon anti-anaphylactic treatment, but the anti-anaphylactic treatment does not appear to make any difference to the acceleration of the serum disease which I mention above.

I am, Sir, yours faithfully,

FREDERIC THOMSON.

North-Eastern Hospital, Tottenham, N., Nov. 19th, 1917.

RECURRENT ATTACKS OF FEVER.

To the Editor of THE LANCET.

SIR,—The disease discussed by Dr. R. V. Solly (Sept. 8th, p. 386) and Professor Tanner Hewlett (Oct. 8th, p. 552) can hardly be rat fever. I have recently attended a well-marked case for 12 months, in which rat infection could be pretty certainly excluded, or, indeed, a wound of any kind. The only organism found in the blood was *Bacillus fæcalis*, and the febrile attacks occurred on the average every 10 days.

The patient was an active, vigorous old man, in good health, except for some prostatic trouble. In the early part of October, 1916, he was attacked with fever, rigors, hiccough, and œdema of the right lower limb. No thrombosis could be detected, but the swelling continued. The fever returned from time to time and settled down to fairly regular attacks every ten days, which continued till his death, Nov. 5th, 1917. Between them he picked up and even got out of doors in fine weather. The onset was marked with a shiver, headache, and great drowsiness, and followed by obstinate hiccough and vomiting. The fever only reached 100° F. or 101°, and fell in a day or two. The pulse did not rise above 80. The leg remained white and œdematous for about nine months, but during one attack a red flush spread over it like an ordinary erysipelas. A cultivation was taken from near the edge of the œdema, and a vaccine was made from the *Bacillus fæcalis* found there by Professor I. Walker Hall. The result was remarkable, in that after two or three doses the massive swelling of the leg vanished entirely, but the patient so feared the reaction that he could not be induced to continue them or to have galyl. The febrile paroxysms went on. Sulphur, quinine, and cinnamon had no effect. He finally failed to take food and died much emaciated. The heart was at one time dilated and irregular, but recovered after the vaccine.

It was clearly not malignant endocarditis, nor erysipelas. Shearman and Moorhead noted 11 cases in Egypt in soldiers where this organism was found, but the relapses did not exceed two or three. The chills, vomiting, and slow pulse were present in their patients.[1] More often the *B. fæcalis* is not associated with clinical symptoms.

I am, Sir, yours faithfully,

Clifton, Bristol, Nov. 19th, 1917. GEORGE PARKER.

SIR RICHARD CROFT AND THE CASE OF THE PRINCESS CHARLOTTE.

To the Editor of THE LANCET.

SIR,—I much wish I could support my friend Dr. Hingston Fox in the two points he advances in this matter. The facts of the case, however, prevent my doing so.

1. Dr. Fox states that Queen Charlotte was attended in her confinements not only by Mrs. Draper, the midwife, but by Dr. William Hunter, the official accoucheur. If Dr. Fox will look into the "Obstetric Diary" kept by Dr. Hunter, and printed by Dr. Stark, he will see that Dr. Hunter was never called in until after the baby was born, and his official duty was limited to feeling the Royal pulse and examining the Royal placenta.

2. Upon the authority of Wadd, Dr. Fox states that Sir Richard Croft possessed the M D. degree. Wadd was a gossipy, merry writer, and would not, I think, be considered an authority in the matter. Neither the "D.N.B." nor Burke's *Baronetage* gives Croft a degree. He practised medicine at Oxford for a short time, but the *Alumni Oxonienses*

[1] Brit. Med. Jour., Dec. 30th, 1916.

merely styles him "chirurgus priviligiatus," and mentions no degree. Those who think he graduated M.D. while at Oxford have probably confused him with his son, also named Richard, who was at Balliol College, and who graduated both in Arts and in Medicine.

That Sir Richard Croft was a brilliant practitioner there can be little doubt; that he was in no way responsible for the death of the Princess is equally certain; that he possessed a degree or a diploma is very questionable. He practised at a time when technical qualifications were not necessary. I am, Sir, yours faithfully,

S. D. CLIPPINGDALE, M.D.

Holland Park-avenue, W., Nov. 25th, 1917.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

P. Ward to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Col. (temp. Surg.-Gen.) H. N. Thompson, C.M.G., D.S.O., on completion of four years in his rank, is retained on the Active List, under the provisions of Arts. 120 and 522 Royal Warrant for Pay and Promotion.

Assistant Director of Medical Services: Temp. Major J. S. Jenkins, D.S.O., Canadian A.M.C., and to be Temporary Lieutenant-Colonel whilst so employed.

Deputy Assistant Director of Medical Services: Temp. Major A. Macphail, Canadian A.M.C.

Temp. Lieut.-Col. C. E. Doherty, Canadian A.M.C., relinquishes his appointment.

ROYAL ARMY MEDICAL CORPS.

Major E. L. Moss, M.C., to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

R. M. Ranking to be Major.

To be temporary Majors: Temp. Capt. E. R. Fothergill and Temp. Capt. A. H. Cameron Smith, Canadian A.M.C., M.C.

Temp. Capt. H. C. T. Langdon to be temporary Major while specially employed.

M. R. MacKay, late temporary Captain, is granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: A. G. H. Lovell, H. V. Swindale, C. E. Pepper, W. J. Stephens, G. Lewin, D. C. Norris, K. W. D. MacRae, J. Leach, L. Leslie, A. G Carment, W. A. Hotson; S. W. H. Stuart, R. A. Smith, W. J. Smyth, J. S. E. Selby, H. Ainscow, H. G. K. Young, B H. Moore, B. Knowles, J. Laing, P. R. McNaught, J. Cruickshank, W. Montgomery, H. M. Grey, T. S. S. Holmes, J. A. C. Greene, J. Pryce-Davies, G. H. Morris, R. H. Rains.

A. MacD. Westwater to be temporary honorary Captain whilst serving with the Red Cross Hospital, Bellahouston.

Officers relinquishing their commissions: Temp. Major H. D. Harrison (on ceasing to be employed at the Welsh Metropolitan War Hospital). Temporary Captains: F. W. H. Hutchinson, R. Forbes (and is granted the honorary rank of Captain), H. Cross (on account of ill-health), S. K. Adams, J. W. B. Thorburn, J. C. Mackwood, F. P. Maitland, J. H. Parsons, R. P. N. B. Bluett, B. M. Bennett, W. McDermott, A. Moyse, J. Spencer-Daniell. Temporary Lieutenants: D. V. Muller (on account of ill-health), W. S. Wildman, A. J. Macvie, E. A. Bullmore.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: P. T. Jones, A. Rodd, I. Aubrey, M.C., R. B. Hawes, H. J. Duske, D. V. Murphy, W. J. M. White, E. O. A. Singer, J. H. Vance, E. Butler.

To be Lieutenants: R. N. Mackenzie, Capt. J. I. Watson (from Territorial Force Reserve), H Taylor, C. Shaw-Crisp (from University of London Contingent, O.T.C.).

Capt. T. D. Renwick relinquishes his commission on account of ill-health caused by wounds.

TERRITORIAL FORCE.

Lieut.-Col. R. M. Wilson resigns his commission on account of ill-health and is granted permission to retain his rank and wear the prescribed uniform.

Major (temp. Lieut.-Col.) F. J. Steward, Capt. (temp. Major) H. W. Wilson, and Capt. (temp. Major) T. B. Mouat relinquish their temporary rank and are restored to the Establishment.

Major W. M. Sturrock and Capt. J. F. Neary resign their commissions on account of ill health.

Capt. J. G. Emanuel and Capt. J. Pearson are restored to the Establishment.

Capt. W. H. G. Ball is seconded for duty with a General Hospital.

Capt. F. V. Milburn is seconded for duty with a General Hospital.

P. G. Selby to be temporary Major, Kent Medical Volunteer Corps.

Attached to Units other than Medical Units.—Surgeon-Major A. C. Oldham, from R.F.A., to be Major, with precedence as from July 19th, 1912.

TERRITORIAL FORCE RESERVE.

Major D. E. Dickson, from R.A.M.C., to be Major.

Professor Max Henkel, Director of the Gynæcological Clinic at Jena, has been relieved of his post by a disciplinary court of the High Duchy on the ground of unprofessional conduct, "especially a lax indication for operative measures and for terminating pregnancy." Czerny, Lexer, Hofmeier, Winter, Puppe, and Binswanger were among the witnesses in the case.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Col. W. W. Hearne, D.S.O., Australian A.M.C., qualified at Melbourne in 1894, and was in practice at South Melbourne, where he was anæsthetist to the Alfred Hospital since 1903, prior to joining the Expeditionary Force. The award of the D.S.O. was recorded in THE LANCET of June 9th, 1917, p. 894.

Major N. J. Bullen, Australian A.M.C.

Died of Wounds.

Capt. L. L. McKeever, R.A.M.C., attached Royal Scots, qualified in Ireland in June, 1914, and joined up in 1915.

Major W. L. MacLean, Canadian A.M.C., qualified in Canada in 1908, and was in practice at Glace Bay, South Cape Breton, Nova Scotia, prior to joining the Expeditionary Force.

Capt. G. A. Harvey, R.A.M.C., qualified at Adelaide, New South Wales, in 1911, and after holding an appointment at a local hospital came to England and registered in March, 1914, and became house surgeon at the West London Hospital. Soon afterwards he joined the R.A.M.C.

Died.

Capt. N. J. H. Gavin, M.C., R.A.M.C., qualified at Edinburgh in 1904, and held appointments at the Norfolk County Asylum and at the West Riding Asylum, Wakefield. Later he went to Dunedin, New Zealand, and on returning to England became assistant medical officer at the Menston Asylum, near Leeds, and before joining up was on the staff at the Three Counties Asylum, Arlesey, Hitchin. The award of the M.C. was recorded in THE LANCET of June 9th, 1917, p. 894.

Wounded.

Capt. C. F. Backhouse, R.A.M.C.
Capt. R. T. Cæsar, R.A.M.C.
Capt. J. F. Edmiston, R.A.M.C.
Capt. G. Hislop, R.A.M.C.
Capt. W. W. Morrison, R.A.M.C.
Capt. E. H. Scholefield, R.A.M.C.
Capt. D. P. Thomas, R.A.M.C.
Capt. D. A. MacLeod, Canadian A.M.C.
Lieut. A. S. Porter, Canadian A.M.C.
Capt. W. H. Scott, Canadian A.M.C.
Capt. H. W. Whytock, Canadian A.M.C.
Capt. W. A. Murphy, R.A.M.C., attached King's Own Scottish Borders.
Lieut. A. Rodd, R.A.M.C., attached Royal Field Artillery.
Capt. W. L. Millett, Australian A.M.C.
Capt. E. L. Morgan, Australian A.M.C.
Capt. A. V. Glendinning, R.A.M.C.
Major W. M. A. Fletcher, Australian A.M.C.
Capt. W. K. Colbeck, Canadian A.M.C.
Capt. G. M. Foster, Canadian A.M.C.
Capt. B. R. Mooney, Canadian A.M.C.
Lieut. V. C. Montgomery, R.A.M.C.
Capt. H. P. Caithness, R.A.M.C.
Capt. A. H. Falkner, R.A.M.C., attached Royal Lancaster Regiment.
Capt. J. H. Paul, R.A.M.C.
Capt. T. A. Carson, Canadian A.M.C.
Capt. W. W. Morrison, R.A.M.C.
Capt. A. Jones, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. I. Heaton, Royal West Kent Regiment, died of wounds, only child of Dr. C. J. Heaton, of Westgate-on-Sea, Kent.

Capt. and Adjutant Sir H. G. T. Butlin, Bart., Cambridgeshire Regiment, reported wounded and missing Sept. 16th, 1916, now presumed killed in action, only son of the late Sir H. T. Butlin, Bart., President of the Royal College of Surgeons of England, 1909-11.

Second Lieut. W. S. F. Saundby, Yorkshire Regiment, reported missing Nov. 17th, 1916, now presumed killed in action, youngest son of Dr. R. Saundby, of Edgbaston, Birmingham.

Sergt. F. H. Clouting, Australian A.S.C., killed in action, youngest son of the late Mr. J. R. Clouting, F.R.C.S., of Thetford, Norfolk.

Second Lieut. M. L. Atkinson, Tank Corps, killed in action, only surviving son of Dr. M. C. Atkinson, of Leamington.

OBITUARY OF THE WAR.

KENNETH ANGUS MACCUISH, M.D. NOVA SCOTIA,

CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

Captain K. A. MacCuish, who was recently killed on the Western front, at the age of 42 years, was a native of St. Peter's, Nova Scotia, graduated at Dalhousie University, Halifax, in 1903, and had been in practice at Glace Bay, Nova Scotia. Here he saw a considerable amount of major surgery, Glace Bay being a mining district, and fractures and severe wounds being not uncommon. When at the close of 1915 No. 9 Canadian Stationary Hospital was organised in his native province he joined it, coming over to England in the early summer of 1916. He was attached first to the Granville Canadian Special Hospital at Ramsgate, then for five months was the surgical specialist to the Bramshott Military Hospital, rejoining his unit in April, 1917, when this went to France. A hard and loyal worker and an excellent surgeon, Captain MacCuish rapidly made his name in the medical service. A recent action demanded its toll from the C.A.M.C., as from other units engaged. Captain Ireland, regimental medical officer to one of the Canadian battalions, having fallen in action, MacCuish volunteered from his unit to take his place, only to fall himself. His friend and partner at Glace Bay, Major McLean, attached to a Canadian casualty clearing station, died of wounds a few days later.

JOHN BEAUFOY RANDALL, B.SC., M.B., B.S. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. B. Randall, who was killed in action on Oct. 31st at the age of 28 years, was younger son of Mr. Vyndham Randall, M.R.C.S., of Bridgend, Glam. Educated at Bridgend County School, he took honours certificates of the Central Welsh Board, and graduated in Science at University College, London, with honours in physiology. He then took his medical course at St. Bartholomew's Hospital, and graduated in 1914 with distinction in medicine. Before joining the R.A.M.C. he held for 12 months the post of house surgeon at St. George's Hospital. His early death terminates a career of much promise.



THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet announced. All are members of the R.A.M.C. unless otherwise stated. The dates in parentheses, in those cases where bars have been awarded, refer to the number of THE LANCET in which a record of the original decoration will be found:—

Bar to the Distinguished Service Order.—Major (Temp. Lt.-Col.) J. Hanafin, D.S.O (Jan. 22nd, 1916, p. 215); Temp. Capt. R. McC. Hill, D.S.O. (May 20th, 1916, p. 1059).

Distinguished Service Order.—Major W. B. Craig, Australian A.M.C.; Temp. Capt. J. C. Dunn, M.C.; Temp. Capt. E. H. Griffin, M.C.; Major A. Hailes, Australian A.M.C.; Major H. B. Lee, M.C., Australian A.M.C.; Major K. MacCormick, New Zealand M.C.; Major R. McMaster, Australian A.M.C.; Capt. and Bt.-Major H. F. Panton, M.C.

Bar to the Military Cross.—Temp. Capt. W. T. Brown, M.C. (Oct. 6th, 1917, p. 550); Temp. Lieut. (Temp. Capt.) H. A. Harbison, M.C. (Sept. 2nd, 1916, p. 450); Temp. Capt. C. R. R. Huxtable, M.C. (July 28th, 1917, p. 135); Capt. C. H. Leedman, M.C., Australian A.M.C. (July 28th, 1917, p. 136); Capt. Greg Mackay, M.C. (Sept. 30th, 1916, p. 620); Temp. Capt. C. J. O'Reilly, M.C. (Nov. 13th, 1915, p. 1112); Capt. P. J. F. O'Shea, M.C., Australian A.M.C. (Nov. 24th, 1917, p. 805); Temp. Capt. J. F. McG. Sloan, M.C. (July 28th, 1917, p. 136); Temp. Capt. G. Walker, M.C. (Nov. 18th, 1916, p. 881).

The Military Cross.—Capt. W. M. Abbott, New Zealand A.M.C.; Capt. D. L. Barlow, Australian A.M.C.; Capt. C. H. Brennan, Spec. Res.; Capt. J. H. B. Brown, Australian A.M.C.; Temp. Lt. (Temp. Capt.) R. J. Clausen; Capt. G. Crawshaw; Capt. A. Curtis, Australian A.M.C.; Temp. Capt. D. E. Derry; Temp. Capt. T. Duncan; Capt. F. Ellis; Temp. Capt. A. Gaston; Capt. S. G. Gibson, Australian A.M.C.; Capt. W. E. Graham; Temp. Capt. J. L. A. Grout; Lt. H. J. Henderson; Capt. C. E. K. Herapath; Capt. F. W. Kemp, New Zealand A.M.C.; Capt. D. Mackie, Spec. Res.; Temp Capt. J. C. Mackwood; Temp. Capt. C. F. Maclachlan; Temp. Capt. W. S. Martin; Temp. Capt. J. L. Menzies; Temp. Capt. J. B. Mitton; Temp. Capt. J. H. Morris-Jones; Temp. Capt. J. H. Porter; Temp. Capt. N. P. Pritchard; Capt. J. Purdie, Spec. Res.; Capt. J. Rafter, Spec. Res.; Capt. S. A. Railton, Australian A.M.C.; Temp. Capt. A. Randle; Capt. E. L. Reid, South African M.C.; Capt. H. A. Sandiford; Temp. Capt. W. L. Scott; Capt. F. B. Smith; Capt. E. C. W. Starling, Spec. Res.; Temp. Capt. J. G. T. Thomas; Temp. Capt. J. A. Tippett; Capt. A. A. Turner; Temp. Capt. J. W. Watthews; Capt. H. Whitaker; Temp. Capt. H. D. H. Willis-Bund; Capt. E. W. B. Woods, Australian A.M.C.

MENTIONED IN DESPATCHES.

In a despatch dated June 28th, 1917, received from General Sir A. Murray, G.C.M.G., K.C.B., late General Officer Commanding in Chief, Egyptian Expeditionary Force, dealing with the operations in Egypt under his command from March 1st to June 28th, 1917, the following reference to the medical services occurs:—

"The health of the troops has throughout been singularly good. All branches of the medical services, under Surgeon-General J. Maher, C.B., deserve the highest commendation for their successful work at the front, on the lines of communication, and in the base hospitals. The presence in the force of a number of civil medical consultants, who have so patriotically given their services, has been of the very greatest value, and they have worked in successful accord with the regular medical services of the Army. The Australian Army Medical Corps and the New Zealand Medical Corps have also been remarkable for their efficiency and unremitting devotion."

In a further despatch Sir A. Murray will submit the names of those whom he wishes to bring to notice for gallant and distinguished service during the period under review.

QUEEN MARY'S CONVALESCENT HOSPITAL, ROEHAMPTON.

A MEETING was held at Lady Wantage's house in Carlton-gardens on Wednesday last to discuss the future of this institution, wherein such splendid work has been done for limbless soldiers. Lieutenant-General Sir Francis Lloyd, chairman of the committee of the hospital, traced the history of the institution, summarised its work, and suggested that a formal appeal should be made to the public for at least £100,000 to ensure the proper continuance of its activities. Mr. Walter Long and Colonel Openshaw, chief surgeon to Roehampton Hospital, supported this view, which was unanimously adopted.

HELP FOR WOUNDED SAILORS AND SOLDIERS.—The Central Depôt of the Surgical Branch of Queen Mary's Needlework Guild, 2, Cavendish-square, W., calls the attention of medical men, matrons of hospitals, and others concerned with the welfare and comfort of the sick and wounded to the fact that one of the aims of the Guild is to supply the ordinary dressings, appliances, and comforts required for the troops at home and abroad, as well as special surgical appliances which a surgeon might have difficulty in procuring through ordinary channels.

THE LATE MAJOR PETER MACGREGOR.—Major Peter MacGregor, R.A.M.C., honorary surgeon to the Huddersfield War Hospital, who died on Nov. 15th after an illness extending over a year, was 62 years of age, having been born at Rannoch, Perthshire, in 1855. He received his medical education at the Edinburgh Medical School, qualifying in 1877 as L.R.C.P. & S. Edin., and taking the surgical Fellowship in 1892. After holding some medical appointments in Lancashire and in Kent he entered on practice in Huddersfield, where he quickly achieved success. In 1898 he became honorary surgeon to the Huddersfield Royal Infirmary, and did much to add to the financial resources of that institution, his efforts resulting in an augmentation of the workpeople's contributions from £1000 to £2200, a figure which was maintained for several years. He also assisted in the establishment of the Huddersfield Medical Society, of which he was a former president. In 1896 he was placed on the commission of the peace for the borough. He leaves a widow, two daughters, and one son.

URBAN VITAL STATISTICS.

(Week ended Nov. 24th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was equal to 12·3, against 11·8 and 12·2 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 13·1, or 0·6 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 5·2 in Ilford, 5·3 in Barnsley, and 6·4 in Ealing, to 18·6 in Brighton, 19·4 in Wigan, and 29·2 in Dewsbury. The principal epidemic diseases caused 275 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 94 from measles, 76 from infantile diarrhœa, 51 from whooping-cough, 39 from diphtheria, 13 from scarlet fever, and 2 from enteric fever. Measles caused a death-rate of 1·7 in St. Helens, 3·6 in Acton and in Stockton-on-Tees, and 9·1 in Dewsbury, and whooping-cough of 2·2 in Gateshead and 2·7 in Stockton-on-Tees. The 1315 cases of scarlet fever and the 1588 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 54 and 101 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 157 resulted from violence. The causes of 26 deaths were uncertified, of which 7 were registered in Birmingham, 3 in South Shields, and 2 each in Gillingham, Liverpool, and Blackpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 12·2, against 11·9 per 1000 in each of the two preceding weeks. The 259 deaths in Glasgow corresponded to an annual rate of 12·1 per 1000, and included 7 from infantile diarrhœa, 6 from diphtheria, 3 from whooping-cough, and 2 from measles. The 63 deaths in Edinburgh were equal to an annual rate of 10·7 per 1000, and included a fatal case of scarlet fever.

Irish Towns.—The 115 deaths in Dublin corresponded to an annual rate of 15·0, or 1·9 per 1000 less than that recorded in the previous week, and included 5 from infantile diarrhœa, 2 from measles, and 1 from whooping-cough The 109 deaths in Belfast were equal to a rate of 14·5 per 1000, and included 4 from whooping-cough, 2 from infantile diarrhœa, and 1 from measles.

VITAL STATISTICS OF LONDON DURING OCTOBER, 1917.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 5·3 per 1000 of the population, estimated at 4,237,387 persons; in the three preceding months the rates had been 3·5, 3·1, and 4·2 per 1000. The lowest rates in October were recorded in Kensington, Hampstead, Stoke Newington, Holborn, and the City of London; and the highest rates in Chelsea, Bethnal Green, Stepney, Southwark, and Bermondsey. The prevalence of scarlet fever showed a marked increase over that recorded in other recent months; this disease was proportionally most prevalent in Chelsea, the City of Westminster, Bethnal Green, Bermondsey, Wandsworth, and Lewisham. The Metropolitan Asylums Hospitals contained 1130 scarlet fever patients at the end of the month, against 644, 615, and 807 at the end of the three preceding months; the weekly admissions averaged 177, against 101, 83, and 138 in the three preceding months. Diphtheria was more prevalent than it had been in any of the preceding months of this year; the greatest proportional prevalence of this disease was recorded in Finsbury, Bethnal Green, Southwark, Bermondsey, Deptford, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1070, 1003, and 1111 at the end of the three preceding months, had risen to 1398 at the end of October: the weekly admissions averaged 206, against 142, 122, and 168 in the three preceding months. The prevalence of enteric fever was less than it had been in any of the four preceding months; of the 39 cases notified in October, 5 belonged to Stepney, 4 to Poplar, 3 to Paddington, 3 to Lambeth, and 3 to Battersea. There were 31 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 41, 45, and 46 at the end of the three preceding months; the weekly admissions averaged 7, against 6 in each of the preceding months. Erysipelas was proportionally most prevalent in Chelsea, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The 15 cases of puerperal fever notified during the month included 3 in Islington, 3 in Stepney, 3 in Wandsworth, and 2 in Fulham. Of the 20 cases of cerebro-spinal meningitis 2 belonged to Kensington, 2 to Hammersmith, 2 to St. Pancras, 2 to Shoreditch, 2 to Bethnal Green, 2 to Stepney, and 2 to Lambeth; while of the 7 cases of poliomyelitis 2 belonged to Kensington and 2 to Hammersmith.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ending Nov. 3rd, the deaths of 5087 London residents were registered, equal to an annual rate of 12·5 per 1000; in the three preceding months the rates had been 10·9, 10·5, and 11·0 per 1000. The death-rates in October ranged from 9·0 in Hampstead, 9·6 in Chelsea and in Woolwich, 9·8 in the City of London and in Wandsworth, and 10·0 in the City of Westminster, to 14·3 in Stepney, 14·5 in Holborn, 15·0 in Bermondsey, 16·6 in Southwark, 19·1 in Shoreditch, and 19·8 in Finsbury. The 5087 deaths from all causes included 408 which were referred to the principal infectious diseases; of these, 48 resulted from measles, 8 from scarlet fever, 63 from diphtheria, 47 from whooping-cough, 6 from enteric fever, and 236 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in the City of London; among the metropolitan boroughs they caused the lowest death-rates in the City of Westminster, Holborn, Wandsworth, and Woolwich; and the highest death-rates in Finsbury, Shoreditch, Stepney, Southwark, Bermondsey, and Deptford. The 48 deaths from measles were 30 below the corrected average number in the corresponding period of the five preceding years, and included 14 in Finsbury, 11 in Stepney, 5 in Shoreditch, and 3 each in Islington and Hackney. The 8 deaths from scarlet fever were less than one-half of the corrected average number, and included 2 in Fulham and 2 in Battersea. The 63 fata

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1917.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 living.	Deaths from all causes.	Death rate per 1000 living.
LONDON	4,237,387	—	883	970	—	39	3	15	236	20	7	2173	5·3	—	48	8	63	47	6	236	408	1·0	5087	12·5
West Districts :																								
Paddington	130,668	—	18	29	—	3	—	1	6	—	—	57	4·5	—	—	—	2	—	—	7	9	0·7	145	11·5
Kensington	152,144	—	22	8	—	—	—	—	4	2	2	38	2·6	—	—	—	—	—	1	6	7	0·5	194	13·3
Hammersmith ...	117,965	—	27	16	—	—	—	—	5	2	2	52	4·6	—	—	—	2	1	—	5	8	0·7	133	11·8
Fulham	149,428	—	30	20	—	—	—	2	4	1	—	57	4·0	—	1	2	1	2	—	8	14	1·0	164	11·5
Chelsea	57,298	—	28	4	—	1	—	—	6	—	1	40	7·3	—	—	—	1	—	—	2	3	0·5	53	9·7
City of Westminster	132,853	—	53	19	—	2	—	—	5	—	—	79	6·2	—	—	—	—	1	—	2	3	0·2	126	9·9
North Districts :																								
St. Marylebone ...	98,573	—	7	27	—	1	—	—	2	1	—	38	4·0	—	—	—	—	—	—	8	8	0·8	127	13·4
Hampstead	81,470	—	7	12	—	—	—	—	3	—	—	22	2·8	—	—	—	—	—	—	2	2	0·3	70	8·9
St. Pancras	196,812	—	38	52	—	2	1	1	12	2	—	108	5·7	—	2	1	—	6	—	9	18	1·0	262	13·9
Islington	309,359	—	62	68	—	2	—	3	14	—	—	149	5·0	—	3	—	4	2	1	14	24	0·8	366	12·3
Stoke Newington...	49,776	—	3	9	—	—	—	—	1	—	—	13	2·7	—	—	—	2	—	—	1	3	0·6	51	10·7
Hackney	209,636	—	46	46	—	2	—	—	12	1	—	107	5·3	—	3	1	6	1	—	10	21	1·0	266	13·2
Central Districts :																								
Holborn	38,161	—	4	5	—	1	—	—	—	—	—	10	2·7	—	1	—	—	—	—	—	1	0·3	55	14·8
Finsbury	74,230	—	14	26	—	—	—	1	1	—	—	42	5·9	—	14	—	2	1	—	7	24	3·4	104	14·6
City of London ...	20,113	—	1	5	—	—	—	—	—	—	—	6	3·1	—	—	—	—	—	—	—	—	—	19	9·9
East Districts :																								
Shoreditch	99,932	—	12	27	—	—	—	—	11	2	—	52	5·4	—	6	—	3	2	—	12	23	2·4	183	19·1
Bethnal Green ...	115,552	—	29	52	—	—	1	—	14	2	—	98	8·8	—	—	—	—	1	—	15	16	1·4	126	11·4
Stepney	258,395	—	55	69	—	5	—	3	25	2	1	160	6·5	—	11	—	6	1	—	25	43	1·7	303	12·2
Poplar	155,095	—	31	39	—	4	—	—	4	—	—	78	5·2	—	1	1	1	4	1	9	17	1·1	196	13·1
South Districts :																								
Southwark	177,166	—	39	83	—	2	—	—	18	—	—	142	8·4	—	—	—	8	2	—	20	30	1·8	288	16·9
Bermondsey	113,661	—	63	55	—	1	—	—	10	—	—	129	11·8	—	2	—	1	1	—	17	21	1·9	164	15·0
Lambeth	283,729	—	41	53	—	3	1	—	7	2	—	107	3·9	—	—	—	3	—	—	12	15	0·6	341	12·5
Battersea	159,402	—	33	26	—	3	—	—	13	1	—	76	5·0	—	1	2	2	5	1	6	17	1·1	196	12·8
Wandsworth	310,858	—	80	49	—	1	—	3	13	—	1	147	4·9	—	—	—	4	—	—	9	13	0·4	398	13·3
Camberwell	249,749	—	45	45	—	1	—	—	14	—	—	105	4·4	—	2	—	6	5	1	12	26	1·1	309	13·0
Deptford	107,696	—	18	32	—	1	—	—	15	—	—	66	6·4	—	—	—	1	7	—	9	17	1·6	141	13·6
Greenwich	94,452	—	11	23	—	1	—	1	6	—	—	42	4·6	—	1	1	3	3	—	4	12	1·3	116	12·8
Lewisham	162,901	—	47	29	—	1	—	—	5	1	—	83	5·3	—	—	—	4	—	1	3	8	0·5	177	11·3
Woolwich...	130,313	—	19	42	—	2	—	—	6	1	—	70	5·6	—	—	—	1	2	—	2	5	0·4	130	8·3
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

cases of diphtheria were 7 in excess of the corrected average number; the greatest proportional mortality from this disease occurred in Stoke Newington, Hackney, Finsbury, Shoreditch, Southwark, and Greenwich. The 47 deaths from whooping-cough were 18 in excess of the corrected average number; this disease was proportionally most fatal in St. Pancras, Shoreditch, Poplar, Battersea, Camberwell, Deptford, and Greenwich. The 6 deaths from enteric fever were equal to half the corrected average number, and included 1 each in Kensington, Islington, Poplar, Battersea, Camberwell, and Lewisham. The 236 deaths from diarrhœa and enteritis among children under 2 years of age were less than two-thirds of the corrected average number; the greatest proportional mortality from this cause was recorded in Finsbury, Shoreditch, Bethnal Green, Stepney, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London in October from these principal infectious diseases was more than 40 per cent. below the average.

Obituary.

FRANKLIN PAINE MALL, M.D. MICH.,

PROFESSOR OF ANATOMY AT THE JOHNS HOPKINS UNIVERSITY, BALTIMORE.

THE death of Dr. Franklin Mall at the comparatively early age of 55 (after an operation for gall-stones) is a sad loss to anatomical science. He performed two great works for the profession in the United States—he introduced new methods of teaching anatomy, and he created a school which has had, through its pupils, a widespread influence. The opening of his laboratory at the Johns Hopkins University in 1893 marks the beginning of an era for the subject in the medical schools of America. Bowditch in Boston, and Newell Martin in Baltimore, with well-equipped laboratories and new methods, had laid the foundation of the modern and flourishing American school of physiology, but anatomy was still a handmaid of surgery and of medicine, and taught in old-time dissecting rooms and in the old way. Mall changed this and made the anatomical laboratory of the medical school a workshop for teaching, training, and investigation. With the true Hunterian spirit he had little faith in lectures, but immense faith in steady, continuous concentration in practical work. "The aim," as he said, "is to make the course one continuous problem for each student to investigate, aiding each one with good material, and teaching him how to study." More stress was laid on origin and function than on the acquisition of the dry details of anatomy. The experimental investigating spirit was too strong in the laboratory to allow any but the weakest men to worry over the minutiæ, and a man's examination was largely the weekly report on the character of his work. Inferior students were mercilessly asked to go elsewhere. The best men in the school were attracted to Mall by the quiet helpful way in which they were taught how to work. His own investigations cover a wide field, and with an unequalled technique for modelling and reconstruction his papers were works of art. The *American Journal of Anatomy*, the *Anatomical Record*, and the *Journal of Morphology* testify to the zeal and ability of his pupils. To few men is it given to revolutionise completely the method of teaching and investigating a subject. This Mall did for anatomy in the United States. W. O.

EDWARD BURD, M.D., M.C. CAMB.,

CONSULTING PHYSICIAN TO THE ROYAL SALOP INFIRMARY.

WITH the death of Dr. Edward Burd, of Shrewsbury, in his ninety-first year, there has passed away a typical representative of the Victorian era. Born in Shrewsbury, educated at Shrewsbury School, serving his medical apprenticeship at the Salop Infirmary, with the exception of the few years at Cambridge University and at St. Bartholomew's Hospital, his whole life was spent in Shrewsbury, where he was for long among the most notable figures. For nearly 60 years he was on the staff of the Salop Infirmary, and his memory went back to the famous Erasmus Darwin, Charles Darwin's father, to Dr. Clements, his own immediate predecessor, a great surgeon who was Member of Parliament for the borough. No wonder that Dr. Burd loved to tell of medical ways and customs now appearing almost mythical; for instance, how he and his fellow-students at the infirmary used to toss up each morning to decide who should do the bleedings and who should do the cuppings. He was a real link between Thackerayean and Listerian medicine.

Dr. Burd's success in practice as a young man seems to have been immediate, and for nearly 50 years he did one of the biggest and most responsible practices in Great Br Of iron constitution he seems during this long period c active life never to have been ill, nor to have known fatigue meant, although he worked for 30 years with single day's holiday. A masterful man, virile, d and dominant, he inspired the confidence of his pat who found his intuition and insight wonderful, an judgment hardly ever at fault. Perhaps the secret c success lay in the intense personal interest he took in man, woman, or child with whom he came in contact. collected people as other men collect pictures, book beetles. The practice of his profession was his hobby he loved general practice, not so much for any scie pleasure it gave him as for its personal and human side a consultant, his advice was always honestly and fear given; and it must be recollected that complete cand much more difficult for the local consultant, the fi perhaps, alike of the patient and the general practiti than for the consultant living elsewhere, and called represent abstract science at its keenest.

After being obliged through illness to relinquish pra the special joy of his life had departed, but he continu take vivid interest in the world around him, and espe in its people and their doings, remaining to the end c life a power in the county of Shropshire and one advice was sought in many capacities. H. W.

TIMOTHY HENRY MARTIN, M.R.C.S. ENG., L.S

THE death occurred at his residence at Crawle Nov. 5th, of Mr. T. H. Martin, who, until a few year when he retired, was a well-known practitioner in Sussex. Born at Merthyr Tydvil on May 25th, 183 received his medical education at St. Thomas's Hos He qualified in 1859 and for a short period was surge the Dowlais Ironworks. In 1862 he settled at Cra where he quickly gained a wide practice, obtained a nu of public appointments, and took an active interest in affairs. He retired in 1908. Mr. Martin, who was g esteemed, married Alice, the eldest daughter of Mark L the first editor of *Punch*, by whom he had one so seven daughters. He was a justice of the peac Sussex.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON. examinations held recently the following candidates successful:—

Surgery.—C. W. Bower (Section II.), Cambridge and St. Ba mew's Hospital; R. H. Chadwick (Sections I. and II.), I. Harding (Sections I. and II.), Royal Free Hospital; S. M (Sections I. and II.), Middlesex Hospital; D. Min (Section I.), King's College Hospital; S. G. Mohamed (Sectio Liverpool; and K. S. Vine (Sections I. and II.), Royal Hospital.

Medicine.—J. Behesnilian (Section II.), Charing Cross Ho C. W. Bower (Section II.), Cambridge and St. Bartholomew' pital; C. G. Bunn (Section II.), Charing Cross Hospital; Dyer (Section I.), St. George's Hospital; I. Harding (Se I. and II.), Royal Free Hospital; S. C. Ho (Sectio Cambridge and London Hospital; D. Mintzman (Secti and II.), King's College Hospital; T. F. Reason (Secti and II.), St. Mary's Hospital; and K. S. Vine (Sections I. an Royal Free Hospital.

Forensic Medicine.—J. Behesnilian, Charing Cross Hospit Harding, Royal Free Hospital; M. Ibrahim and S. M Middlesex Hospital; J. E. Nicole, Westminster Hospital; Reason, St. Mary's Hospital; G. E. Spero, London Hospita K. S. Vine, Royal Free Hospital.

Midwifery.—L. E. Lewis, Glasgow; D. Mintzman, King's C H spital; J. E. Nicole, Westminster Hospital; and K. S. Royal Free Hospital.

The diploma of the Society was granted to the following cand entitling them to practise medicine, surgery, and midwifery: Bower, R. H. Chadwick, S. Mikhail, S. G. Mohamed, T. F. Reaso K. S. Vine.

MEDICAL SOCIETY OF LONDON.—The next me of this society will be held on Monday, Dec. 3rd, at 8.3 at 11, Chandos-street, Cavendish-square, W. 1, when cussion on the Surgical and Dental Treatment of S Facial Injuries will be introduced by Major H. D. G R.A.M.C., Captain Kelsey Fry, R.A.M.C. (T.), and Percival Cole. Colonial and other R.A.M.C. officer invited to attend.

Professor B. Krönig, Director of the Gyn logical Clinic at Freiburg, died on Oct. 29th at the a 55 years.

HUNTERIAN SOCIETY.—A meeting will be held on Thursday, Dec. 6th, at 5 P.M., at the Royal Society of Medicine, 1, Wimpole-Street, W., when a discussion on the Medical Classification of Recruits will be opened by Captain Haldin Davis, R.A.M.C.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society will be held in the library of the St. Mary's Hospital Medical School on Dec. 15th, at 5.30 P.M., when a discussion on "Neurasthenia" will be opened by Dr. F. W. Mott, F.R.S.

SOCIETY FOR THE STUDY OF INEBRIETY.—The next meeting of this society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, Jan. 8th, 1918, at 4 P.M., when Sir Robert Armstrong-Jones will open a discussion on "Alcohol and Mental States."

CENTENARIAN.—Mrs. Ann Vickery Ritchie passed away recently at Brighton, at the age of 100. Her hundredth birthday was in August last. She enjoyed good health and remarkable vigour until October, when she fell and broke a thigh.

CENTRAL MIDWIVES BOARD.—Special meetings of the Central Midwives Board were held at Queen Anne's Gate Buildings, Westminster, on Nov. 14th and 15th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the Roll, the following charges amongst others having been brought forward:—

A midwife being in attendance at a confinement and the patient suffering from persistently offensive lochia, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (4). This midwife neglected to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14, and to enter her record of pulse and temperature in a notebook or on a chart carefully preserved, as required by Rule E. 14. A case being one of abortion, the midwife neglected to explain that it was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (2); she did not carry with her to a confinement the appliances and antiseptics prescribed by Rule E. 3, and did not keep her register of cases as required by Rule E. 24. Being in attendance at a confinement, and the placenta and membranes not having been completely expelled within two hours after the birth of the child, a midwife neglected to hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might immediately be forwarded to a medical practitioner or to an approved institution, as required by Rules E. 20 and 21 (3). The advice of a registered medical practitioner having been sought under Rule E. 20, she neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1)(a). Being in attendance previous to and at a confinement and the patient suffering from excessive bleeding, a midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (3); she neglected to disinfect her hands and forearms on each occasion before touching the generative organs of the patient or their neighbourhood, as required by Rule E. 4; and she neglected to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution before making the first internal examination, as required by Rule E. 8. The midwife did not on each occasion when attending the patient wear a clean dress of washable material that could be boiled, as required by Rule E. 2.

At the meeting held on Nov. 15th a letter was considered from the general secretary of the Medical Defence Union asking the Board to deal with a complaint made against a certified midwife by a registered medical practitioner. The Board directed that the general secretary of the Medical Defence Union be informed that where a complaint for which an appropriate remedy is provided by due course of law is made against a midwife it is contrary to the practice of the Board to deal with the midwife until the complainant has exhausted his remedy at law. A letter was considered from the clerk of the London County Council asking the Board to take into consideration the opinion expressed by a London coroner that the form of sending for medical help, as prescribed by Rule E. 23 (a), should not specify the name of any particular doctor. The Board decided that the clerk of the London County Council be informed that the Board will take the coroner's suggestion into consideration on the next revision of the rules. A letter was considered from the medical officer of health for Brighton enclosing a draft circular letter which he proposes to send to all midwives practising within his jurisdiction, and asking whether, in the opinion of the Board, he would be acting within his powers by preventing midwives from attending patients suffering from gonorrhœal conjunctivitis while in attendance on other cases. The Board directed that with reference to the circular letter drafted by the medical officer of health for Brighton the reply be: (1) Ophthalmia. The Board agrees that in severe cases of ophthalmia it is very undesirable that the midwife should continue in charge of the eyes, as the disease is highly contagious. But it thinks that special arrangements, under the general supervision of an expert, should always be carried out with the consent of the patient (mother), who has the right to choose the medical practitioner called in accordance to Rule E. 6, and that the case should be visited and the reasons for such special arrangements explained to the mother and midwife by the inspector of midwives or by the medical practitioner called in consultation. (2) Stillbirths. The Board quite approves of the proposed arrangements for the examination of a piece of the placenta in such cases. It thinks, however, that the information as to the presence of syphilis should not be left to the midwife to convey to the parents.

THE King has sanctioned the following appointments to the Order of the Hospital of St. John of Jerusalem in England:—Surgeon-General Thomas Martin Corker, C.B., K.H.P., A.M.S.; Lieut.-Col. Reginald James Cope Cotes, R.A.M.C.; Lieut.-Col. Claude Kyd Morgan, C.M.G., R.A.M.C.; and Major James Fitzgerald Martin, C.M.G., R.A.M.C., to be Knights of Grace.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The National Health Insurance Bill.

THIS Bill has been read a second time in the House of Commons. It deals with questions of finance and the simplification of administration. In the course of his speech, Sir E. CORNWALL, who represents the Insurance Commissioners, stated that during the year 1916 the employers and employed contributed £18,500,000 and the State £5,000,000 to National Insurance. That sum was disbursed as follows: Sickness and disablement benefit, £6,000,000; medical services, £4,800,000; maternity benefit, £1,250,000; sanatorium benefit, £750,000; administration expenses, £1,250,000; balance invested, £8,500,000. A great part of the discussion turned on the relation of solvent to insolvent Approved Societies.

HOUSE OF COMMONS.

THURSDAY, NOV. 22ND.

Review of Exceptions Act.

Mr. MONTAGUE BARLOW asked the Minister of National Service whether, in view of the fact that the Review of Exceptions Act was passed with the definite object of reviewing the cases of some 6000 men, the cases of these men had now all been considered; and whether he could hold out a prospect of introducing a Bill with a view to either restricting or repealing the provisions of this Act.—Sir AUCKLAND GEDDES answered: I am not aware that the Review of Exceptions Act was passed with the object stated in the question. When the Bill was introduced it was stated in this House that it would enable the military authorities to deal with 1,000,000 men, and that it was estimated that 100,000 recruits would be so obtained. At a later stage in the debate certain classes of men were withdrawn from the operation of the Bill and a substituted estimate was given that the number of men available for re-examination would exceed 500,000, and the number to be obtained for military service would be from 50,000 to 60,000. The men liable for re-examination under the Act have in fact not yet been examined. The operation of the Act has been restricted by the concession under which its provisions are not enforced where a man to whom notice has been sent shows that he is a man who has served overseas in the armed forces of the Crown and has been discharged on grounds of health. Moreover, there has been organised refusal to furnish particulars or to attend for medical examination as required by the Act by certain men to whom notices have been sent. I have been in communication with the Public Prosecutor on this question and proceedings are about to be taken to deal with such resistance to the Act. In other respects the Act remains a necessary part of the military service machinery and it is not proposed to introduce a Bill to repeal it or restrict its operation.

Medical Students in the Royal Navy.

Mr. COCHRANE asked the Secretary to the Admiralty whether medical students who were at present acting as surgeon probationers or sick-berth attendants in His Majesty's Navy could not obtain their discharge in order to resume their studies unless they were able to qualify as medical practitioners within nine months, whereas similar students in His Majesty's Army could obtain their discharge for this purpose if they could qualify within three years; and, if so, whether, in view of the shortage of medical practitioners, he would grant equal facilities to medical students in His Majesty's Navy.—Mr. MACNAMARA replied: Medical students who are serving in the Navy as surgeon probationers or sick-berth attendants and who apply for demobilisation for the purpose of sitting for their final examination are granted that permission if they can sit for their final examination within 18 months from

he date of their application. The question of being able to ualify in nine months has never been taken into account n considering such applications. I might add that at the resent moment steps are being taken, in conjunction with he Ministry of National Service, with a view to securing hat the service of medical students as surgeon probationers hall be limited to six months, but in no case shall exceed 2 months.

Infant Welfare Legislation.

Replying to Mr. CURRIE, Mr. HAYES FISHER (President of he Local Government Board) wrote: The Bill which I am nxious to introduce would be one for conferring on sanitary uthorities and county councils in England and Wales the ame powers in regard to maternity and infant welfare as ere conferred on local authorities in Scotland and Ireland y the notification of Births (Extension) Act, 1915—namely, ne power to make such arrangements as they think fit and s may be sanctioned by the Local Government Board, for ttending to the health of expectant mothers and nursing nothers and of children who have not attained the age of ve years and are not being educated in schools recognised y the Board of Education. I shall be very glad to see the ill introduced and printed.

MONDAY, NOV. 26TH.

Drill of R.A.M.C. Officers.

Major D. DAVIES asked the Under Secretary for War hether, in view of the demand for doctors for purely linical work both here and in France, he could state the uration of the period of drill which medical officers who oined the Royal Army Medical Corps had to undergo before ney were able to give their full time to the clinical duties their profession.—Mr. MACPHERSON answered: The uration of the course which includes not only drill but ilitary sanitation, anti-gas protection, and the duties of a edical officer with the troops in the field, depends upon the emands which have to be met for overseas reinforcements nd upon the shipping available, but it usually lasts three eeks.

Distribution of R.A.M.C. in France.

Major D. DAVIES asked the Under Secretary for War hether he would state the terms of reference of the committee which, under the chairmanship of General Sir rancis Howard, was now inquiring into the distribution of the oyal Army Medical Corps in France; whether subordinate fficers of the Royal Army Medical Corps had been enabled communicate directly with the committee, or if such communications were only made through their commanding fficers; and whether it was proposed that a similar inquiry ould be undertaken in this country.—Mr. MACPHERSON nswered: This committee was appointed by the War Office n its own initiative, and I think the consideration of such atters as my honourable and gallant friend suggests had tter wait until the report is received.

Surgeon-General Sir A. Sloggett.

Major D. DAVIES asked the Under Secretary for War nether Surgeon-General Sir Arthur Sloggett exercised mplete control over the Royal Army Medical Corps in rance and Belgium; and, if so, whether he was appointed that position because of his services as Director of Medical rvices in India during the period immediately preceding e appointment of Sir W. Babtie.—Mr. MACPHERSON wrote reply: He exercises control under the Commander-in nief in France in the same way as any other head of a partment in the field. He was sent to France by Lord tchener, because no doubt he thought him the best man the appointment.

Supplies of Carbide of Calcium.

Mr. CATHCART WASON asked the Secretary to the Admiralty nether his attention had been directed to the fact that . Henry P. Taylor was acting as surgeon to the lmiralty, and had received notice that no more carbide of lcium would be supplied him, and, in view of the fact that ing to the long nights in the North much of his work had be done in the dark, it was impossible to do his work thout a supply of necessary light; and whether he would e the matter his consideration.—Sir W. EVANS (Secretary the Ministry of Munitions) who replied, wrote: So far as I n aware no application for a supply of calcium carbide has en received by the Ministry of Munitions from Dr. H. P. ylor. Owing to the serious shortage of this material it s become necessary greatly to restrict its use for illuminating purposes. In cases, however, where it is proved at carbide is essential for carrying out Government war rk, the Ministry of Munitions, through their priority partment, have arranged to supply sufficient quantities for s purpose.

Yorkshire Practitioners and Invalided Soldiers.

Mr. TREVELYAN asked the representative of the National surance Commissioners whether he could state the number York and Yorkshire panel practitioners who had notified ir respective Insurance Committees that they were not prepared to accept invalided seamen, marines, and soldiers on their lists under the terms of the new regulations.—Sir E. CORNWALL wrote in reply: No, sir; the number of such doctors in the areas referred to in the question is not known to me. I may add that the regulations in question are framed in accordance with the express desires of authoritative representatives of the medical practitioners concerned, and that events subsequent to their issue have shown that the regulations are, in fact, acceptable to the great majority of such practitioners.

WEDNESDAY, NOV. 28TH.

Medical Boards.

Mr. NEEDHAM asked the Minister of National Service whether he was continuing to work with Local Medical War Committees in regard to the appointment of members of medical boards.—Sir AUCKLAND GEDDES wrote in reply: The answer is in the affirmative.

Mr. NEEDHAM asked whether the members of the medical boards were appointed directly by the right honourable gentleman, and whether he would state the exact method of composing these boards.—Sir AUCKLAND GEDDES replied: Members of medical boards are appointed by the Chief Commissioner of Medical Services on the authority of the Minister. The boards are composed of civilian medical practitioners drawn from a panel set up in the area of each board. The chairman of each board, who is the Deputy Commissioner of Medical Services of this Ministry for an area, arranges with the Local Medical War Committee a roster of attendances of members at sessions of his board. The panels are formed from medical practitioners whose names have been suggested by the Local Medical War Committee; a board of four requires a panel of 8 to 12 members; the nominations reach the Ministry through the Central Medical War Committee, they are reviewed in the medical department of the Ministry and by the Chief Commissioner of Medical Services for the region to which the panel belongs, and finally the appointments to the panels are made by the Minister and notified to the Deputy Commissioner of the area.

Mr. NEEDHAM also asked whether the Central Medical War Committee had any authority in the maintenance of or appointment to membership of national service medical boards; and, if so, whether he would state the exact terms of their authority.—Sir AUCKLAND GEDDES answered: The Central Medical War Committee have no authority in the maintenance of or appointment to membership of national service medical boards. The Committee, through their local organisation, have been asked by the Ministry, having in view the requirements of the civil population, to suggest the names of certain medical practitioners fitted to serve on the boards as stated in answer to the former question asked by the honourable Member. The Central Medical War Committee is the statutory appeal tribunal for the medical profession, and any member of a national service medical board called upon to undertake military service may have his case reviewed by this appeal tribunal. For a full statement as to the authority of this Committee I would refer the honourable Member to the Military Service (Professional Committees Regulations) Order 343 of 1916.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

DORNFORD, C. T., L.R.C.P. Edin., M.R.C.S. Eng., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Lytham District of the county of Lancaster.

JONES, C. R., M.B., Ch.B. Vict., Certifying Surgeon under the Factory and Workshop Acts for the Arnesby district of the county of Leicester.

NOLAN, M. J., L.R.C.S. Irel., Consulting Visitor in Lunacy to the Down District Asylum, Downpatrick.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BERMONDSEY MEDICAL MISSION FOR WOMEN AND CHILDREN.—Female Resident. Salary £150 per annum, with board, &c.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, Birmingham. Clinical Assistant. Salary £50 per annum.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—House Surgeon. Salary £200 per annum.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon for six months. Salary at rate of £175 per annum, with board, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Surgeon. Salary, if qualified, £150 per annum; unqualified, £100, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

CHARING CROSS HOSPITAL.—Resident Medical Officer. Salary £400 per annum, with board, &c.

DARLINGTON HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Resident House Surgeon. Also Assistant House Surgeon.

GENERAL LYING-IN HOSPITAL, York road, Lambeth.—Resident Medical Officer for three months. Salary £100 per annum, with board, &c.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary as arranged, with board, &c.

ILFORD URBAN DISTRICT COUNCIL.—Temporary Medical Officer of Health. Salary at rate of £550 per annum.

KENT EDUCATION COMMITTEE.—Temporary School Medical Inspector and Medical Officer of School Clinic. Salary at rate of £385 per annum.

LONDON LOCK HOSPITAL, Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.

MANCHESTER, CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £400 per annum.

MANCHESTER ROYAL INFIRMARY (CENTRAL BRANCH).—Resident Surgical Officer. Salary £200 per annum.

MANCHESTER SANITARY COMMITTEE.—Female Medical Officer. Salary £400 per annum.

POOLE, BOROUGH OF.—Temporary Medical Officer of Health and School Medical Officer.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary £100 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—House Surgeon.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Female Medical and Surgical Registrars.

SERBIAN RELIEF FUND, 5, Cromwell-road, S.W.—Medical Officer; also Female Doctor for hospital for Serbian civilians.

STOKE-ON-TRENT, COUNTY BOROUGH TUBERCULOSIS SANATORIUM.—Resident Assistant Medical Officer. Salary £250 per annum, with board, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.

WANDSWORTH UNION, ST. JAMES'S INFIRMARY, Ouseley-road, Balham, S.W.—Temporary Assistant Medical Officer. Salary £7 7*s.* per week, with resident allowances.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Clinical Assistants for six months.

WHITTINGHAM, PRESTON, LANCS., COUNTY ASYLUM.—Locum Tenens, unmarried. Salary £7 7*s.* per week, with board, &c.

YORK COUNTY HOSPITAL.—Female House Physician. Salary £200 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

MORTON-WOOD.—On Nov. 26th, at 131, Bromley-road, Catford, S.E., the wife of Dr. S. S. Morton-Wood, of a son.

PHILP.—On Nov. 25th, at Northmoor road, Oxford, Margaret, the wife of Captain C. H. G. Philp, M.B., R.A.M.C., of a son.

ST. JOHNSTON.—On Nov. 21st, at Harrington-gardens, the wife of Captain Adrian St. Johnston, R.A.M.C., of a daughter.

MARRIAGES.

MULLINS—JACKSON.—On Nov. 20th, at Holy Trinity Church, Eltham, Captain H. R. Mullins, S.A.M.C., to Jocelyn Genville Selmes, younger daughter of Mr. and Mrs. F. S. Jackson, of North Park, Eltham, Kent.

SUTTON—WILSON.—On Nov. 20th, at the Parish Church, Rotherham, Surgeon-General Alexander Arthur Sutton, C.B., D.S.O., A.M.S., to Mary Wilson, R.R.C.

DEATHS.

HARVEY.—On Nov. 25th, of wounds, at a casualty clearing station, Gilbert Aberdein Harvey, Captain, R.A.M.C.

INGLIS.—On Nov. 26th, at Newcastle-on-Tyne, on her return from Russia, Dr. Elsie Inglis.

JAMESON.—On Nov. 26th, at 2, Great Cumberland-place, W. 1, Sir Leander Starr Jameson, Bart., P.C., C.B., M.D., in his 65th year. Funeral arrangements will be announced later. No flowers by special request.

YOUNG.—On Nov. 24th, at Westbourne-square, Edward Parker Young, M.R.C.S., L.R.C.P., L.S.A., &c., aged 79.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 28th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 22	...	60	56	53	52	53	Overcast
,, 23	...	71	58	51	51	52	Fine
,, 24	...	80	58	47	49	50	Overcast
,, 25	0·02	71	50	41	37	43	Cloudy
,, 26	0·06	53	53	32	31	35	Fine
,, 27	0·49	75	58	35	50	53	Cloudy
,, 28	...	62	56	50	49	50	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Notes, Short Comments, and Answers to Correspondents.

THE SURGICAL REQUISITES EXHIBITION.

AN interesting exhibition of surgical appliances has just been held in the Grafton Galleries by the Surgical Requisites Association, of 17, Mulberry Walk, Chelsea. This association has done much good work for nearly the whole duration of the war in making surgical appliances of all kinds for the use of the wounded, and it was thought well to hold an exhibition of the products of the skill of the members of the association, at the same time as a fair for the sale of fancy articles for the purpose of repairing the association's finances; and it says much for the broadmindedness of the association that several other societies of like nature were enabled also to show their work. Perhaps the most striking exhibit was the papier maché splints. These are of all sorts and the method is adaptable to practically every part of the body; by means of a solution of cotton in a copper salt it has been found possible to make the splints perfectly waterproof, and their extreme lightness will commend them to every surgeon. They are superior to celluloid in that they are non-inflammable, and as they are comparatively transparent to X rays a skiagram can be taken although the splint is in position. Lastly, these papier maché splints are extremely comfortable, for they always fit exactly, as they are moulded to each individual case. The S.R.A. "Williams" double Balkan support is an independent erection over the bed, fitted with travelling framework suspended from ball-bearing runners on a railway track; there are also swinging booms sliding on the Balkan beams to any alignment of the body required, with pulley attachments for slinging the limbs of patients and for counterbalances. There are also extension bars in various positions, and a lifting framework bed with winding gear for raising separately or together the head and feet. In fact the whole arrangement is most complete and useful, the only fear being that if many more appliances are added to the bed it will become too complicated for use, a possibility which all who have to do much with the working of wards will acknowledge. The Kensington W.H.S. depôt had a large number of exhibits, among which may be mentioned the flexing glove for bending stiff fingers, the Stuart Moore arm flexion splint, and the Sinclair net bed. The P.M. Standard Splint Association had some useful modifications of Thomas's splints. The British Red Cross Society exhibited some convenient patterns of arm and leg splints. The cradle leg splints were especially good. Mr. J. Coryton Roberts showed several ingenious appliances. The "Lanka" sling crutch transfers much of the weight of the body to the hand, in this way relieving the axilla. The "folding cradle" is cheap, effective, and easily stowed away. The "Gladys" bed-table is extremely ingenious, and should prove of the greatest use to those confined to bed. The Clifton bed book-rest is also clever. The whole exhibition demonstrated the great amount of ingenuity and skill lying hitherto dormant among the leisured population of this country.

BOOKS OF REFERENCE.

THAT useful publication, *The Year Book of the Universities of the Empire* (London: Herbert Jenkins. 1917. Pp. 412. Price 7*s.* 6*d.* net), which was suspended last year for reasons of economy, again makes its appearance, though in a slightly curtailed form. Readers are referred to the 1915 edition, where full information will be found regarding conditions of admission, degrees, scholarships, residential facilities, laboratories, museums, libraries, and so forth. The names given in the directories of the individual universities in the present edition of the Year Book are those of the incumbents of the offices, whether still fulfilling their duties at the university or otherwise engaged on national service, though in some cases there are omissions, the information not having been received by the compilers. Appendices to the present volume give summaries of the Beit Memorial Fellowships for medical and scientific research, the science research scholarships awarded by the Royal Commissioners for the exhibition of 1851, and the Rhodes Scholarships.—The official book of reference to the Association of Head Mistresses, *The Girls' School Year Book*, 1917 (London: The Year Book Press. Pp. 632. Price 5*s.* net), contains an alphabetical list of public schools for girls, together with full information regarding terms, fees, hours of attendance, scholarships, names of staff, and other matters of interest to both parents and teachers. A section of the book deals with the future career of girls on leaving school, and particulars are given of various professions and appointments for women.—*The Annual*

Charities and Digest, now in its thirty-sixth edition (London: Longmans, Green, and Co. 1917. Pp. ccclxxvi. + 702. Price 5s. net), is a classified register of charities in or available for the metropolis, together with a digest of information respecting legal and voluntary means for the prevention and relief of distress and the improvement of the condition of the poor. There is an ample index and an introduction, How to Help Cases of Distress, by Mr. C. S. Loch, late secretary to the council of the Charity Organisation Society. Articles on special branches of charitable work include one on Lunatics, Idiots, and Imbeciles, by Dr. H. Rayner, and one on Inebriety and Inebriates, Tuberculosis and the Tuberculous, and Child Welfare, by Dr. T. N. Kelynack.—*British Rainfall*, by H. R. Mill and Carle Salter (London: Edward Stanford. 1917. Pp. 256. Price 10s. net), deals with the distribution of rain in space and time over the British Isles during the year 1916. The records have been made by more than 5000 observers in Great Britain and Ireland. Short articles discuss various branches of rainfall work.

A GENERAL LICENCE FOR THE PURCHASE OF POTASSIUM COMPOUNDS FOR MEDICINAL PURPOSES.

NDER an Order issued by the Ministry of Munitions, dated Oct. 17th, 1917, no person may offer to purchase, purchase, or take delivery of certain potassium compounds, except in accordance with the terms of a licence. No licence is required (*a*) by the Admiralty or War Office, or (*b*) by any person for the purchase and delivery of potassium compounds in quantities not exceeding in weight an aggregate of 3 lb. avoirdupois during any one calendar month. Caustic potash, chloride, carbonate, and sulphate of potash are the compounds included, while any material applies also of which more than 10 per cent. consists of any one or more of the above compounds. The purchase may be licensed in regard to exceeding the supply of 1 lb. per month, provided that the compounds so purchased are used solely in B.P. form or in B.P. preparations for purely medicinal purposes. By this general licence medical men, druggists, hospitals, and similar institutions are relieved of the onus of applying for individual licences. It will, however, be necessary for wholesale houses in making their returns to the Controller to state the aggregate amount and value of the sales of compounds for purely medicinal purposes during the period covered by each return.

THE CAMERA CLUB.

DURING December the Camera Club (17, John-street, Adelphi, W.C. 2) is showing an exhibition of black-and-white drawings by patients and members of the staff of the 3rd London General Hospital illustrating the humours of ward life as seen by the wounded and their orderlies. Admission, between 11 A.M. and 5 P.M., is free, and tickets can be obtained from any member of the club or on application to the honorary secretary.

A SUBSTITUTE FOR IODINE TINCTURE.

HIGHLY placed German veterinary surgeon states from long experience that tincture of iodide can be effectively replaced by the following mixture: $FeSO_4$, 5; tannin dissolved in spirit), 5; acid. carbol. liq., 1; water to 100. Carbolic ink, as he calls it, is stated to be both disinfecting and drying to wounds.

Medical Diary for the ensuing Week.

SOCIETIES.

MEDICAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Prof. W. H. Young: On the Series of Legendre.—Mr. L. Hartshorn: The Discharge of Gases under High Pressures (communicated by Hon. R. J. Strutt).—Dr. A. Russell: The Electrostatic Problem of a Conducting Sphere as a Spherical Cavity (communicated by Dr. C. Chree).—Prof. G. N. Watson: The Zeros of Bessel Functions (communicated by Prof. J. W. Nicholson).

MEDICAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Dec. 4th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 5.30 P.M.

Paper:

Capt. W. H. R. Rivers, R.A.M.C., F.R.S. (introduced by the President): The Repression of War Experience.

LARYNGOLOGY (Hon. Secretaries—Gordon W. Goodhart, J. A. Murray): at 5.30 P.M.

Papers:

Mr. W. S. Lazarus-Barlow: An Attempt at the Experimental Production of Carcinoma by means of Radium.

Prof. S. G. Shattock, F.R.S.: Explosive Phenomena in Gunshot Wounds.

Thursday, Dec. 6th

PHYSIOLOGY AND CLIMATOLOGY (Hon. Secretaries.—Chas. W. Buckley, J. Campbell McClure): at 5.30 P.M.

Paper:

Dr. C. F. Sonntag (M.O. in charge of the Hydrological Department, Military Orthopædic Hospital, Shepherd's Bush): The Physiological Action of Whirlpool and Manipulation Baths, with Indications for Treatment based thereon.

Dr. Sonntag will also demonstrate the Arthrodynamograph.

(At 7.15 P.M. the members will dine together at Pagani's Restaurant, Great Portland street, W., and members may bring guests. Members who wish to dine are requested to send their names to Dr. Campbell McClure, 59, Harley-street, W. 1)

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—T. G. Stevens, Comyns Berkeley): at 8 P.M.

Discussion:

Scopolamine-morphine Narcosis in Child-birth (Twilight Sleep).

The Discussion will be opened by Dr. J. S. Fairbairn, Dr. C. Hubert Roberts, Mr. T. G. Stevens, and Dr. Herbert Williamson.

Friday, Dec. 7th.

LARYNGOLOGY (Hon. Secretaries—W. D. Harmer, Frank A. Rose): at 4 P.M.

Cases will be shown.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, Major Greenwood): at 8.30 P.M.

Presidential Address.

Lieut.-Col. G. S. Buchanan, M.D.: Epidemics of the Easter Campaign.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W. 1.

MONDAY.—8.30 P.M., Discussion on Surgical and Dental Treatment of Severe Facial Injuries (introduced by Major H. D. Gillies, R.A.M.C., Capt. K. Fry R.A.M.C.(T.), and Mr. P. Cole.

HUNTERIAN SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

THURSDAY.—5 P.M., Discussion on the Medical Classification of Recruits (opened by Capt. H. Davis, R.A.M.C.).

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Papers:—Mr. R. Lake: The Methods of Detecting Simulated Deafness.—Mr. P. Dunn: The Methods of Detecting Simulated Blindness.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones:—

MONDAY.—5 P.M., Lecture V.:—Prof. A. Keith: The Application of Discoveries made by Marshall Hall, C. E. Beevor, and Duchenne.

WEDNESDAY.—5 P.M., Lecture VI.:—Prof. A. Keith: The Bearing of the Discoveries of Modern British Neurologists on Orthopædic Practice.

FRIDAY.—5 P.M., Lecture VII.:—Prof. A. Keith: The Bearing of the Discoveries of British Neurologists (continued).

The Lectures will be illustrated by specimens from the Army Medical Collection now on exhibition in the Museum and also by specimens from the College Collection.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella.

TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting.

WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 3.30 P.M., Special Demonstration:—Mr. T. H. C. Benians: The Detection and Treatment of Disease "Carriers" in Private Practice. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

THURSDAY.—2.30 P.M., Medical Out-patients, Dr. A. J. Whitngi Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. H. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.

FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

SATURDAY.—2.30 P.M., Surgical Operations Mr. H. W. Carson.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Ringed Eruptions of the Skin.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

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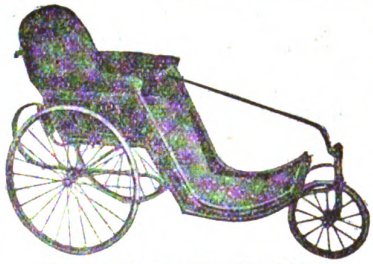
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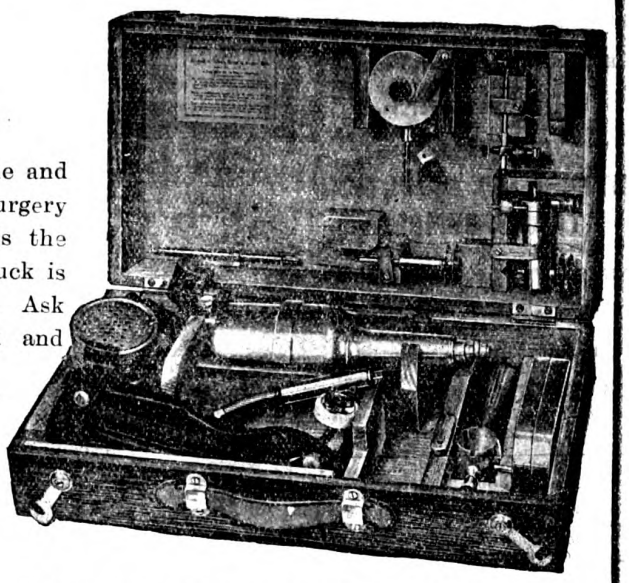
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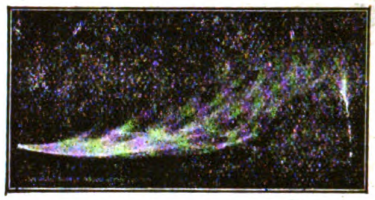
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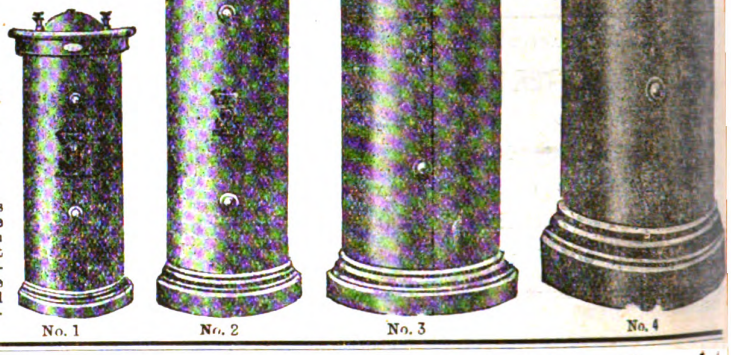
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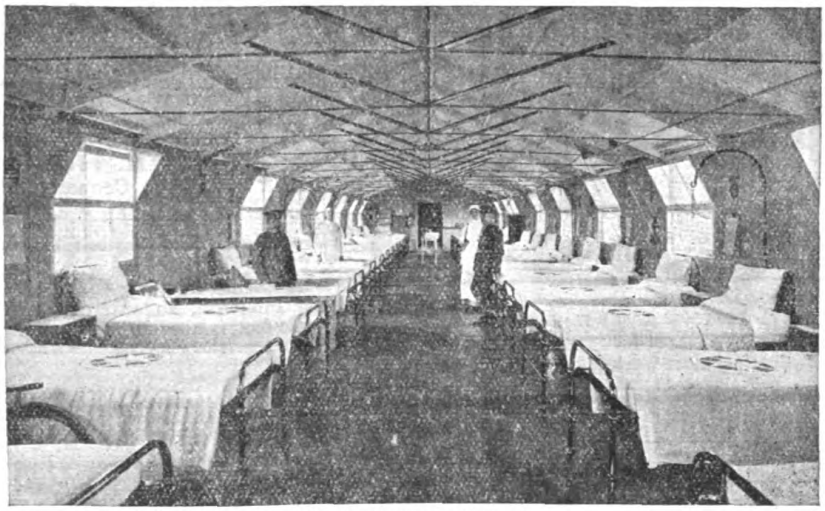
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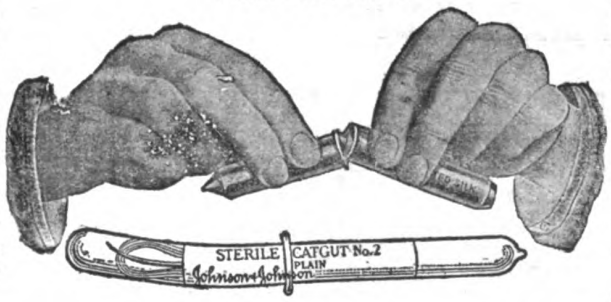
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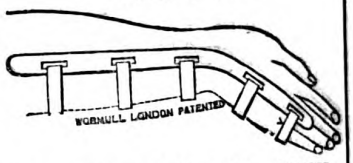
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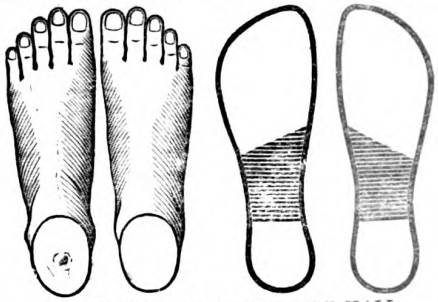
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A **High-class Home** for the **Curative Treatment** of Nervous Affections. Situated a mile from the City of Norwich. Special and **Separate** accommodation is provided for those suffering from Hysteria and for cases of **Incipient Mental** trouble, who can be received as **Voluntary Boarders** without certificates and occupy their own private suites of apartments. A staff of experienced nurses has been organised to take charge of patients in their own homes. For terms, &c., which are moderate and inclusive, apply to the Misses MCLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., &c., Medical Superintendent.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.

Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.

MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.

Other days by appointment.

Visiting and Consulting Physicians { Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. H. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.

Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

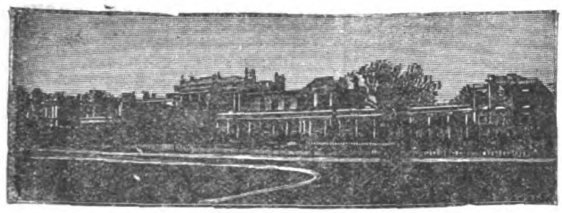
HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED, Certificated or otherwise.

Dr. STANLEY GILL or Dr. HAYES GILL may be consulted at 31, RODNEY ST., LIVERPOOL, from 2 till 4 P.M. every Monday and Thursday.

For terms, &c., apply to STANLEY A. GILL, M.D., M.R.C.P.Lond. Telephone—No. 8 FORMBY.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.

Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.

Thirty years' Experience. Excellent Medical References.

For Terms and Particulars, apply Miss RILEY or PRINCIPAL.

Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr. RISIEN RUSSELL, Dr. OSWALD, and others.

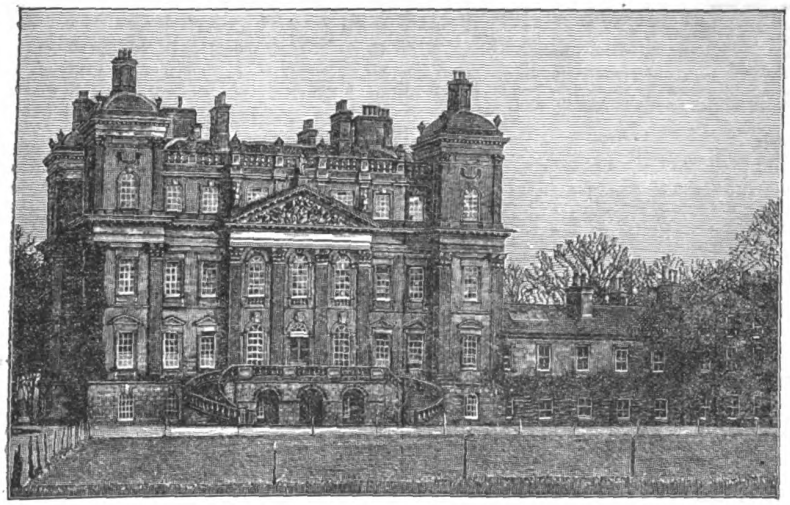
Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.



DUFF HOUSE, BANFF, SCOTLAND.

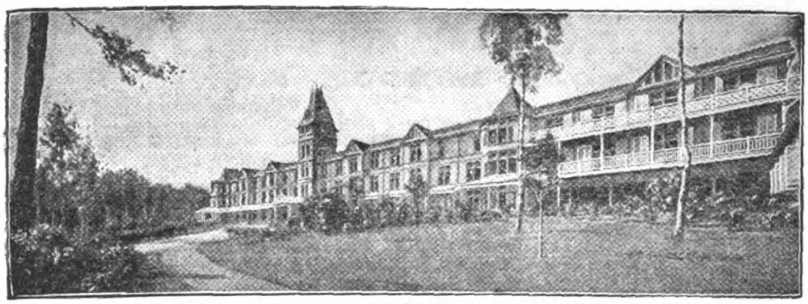
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

DARTMOOR SANATORIUM. 750 FEET.

TUBERCULIN USED ONLY FOR SUITABLE CASES.

WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; —— ——

For particulars, apply C. H. BERRY. M.R.C,S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes. Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

NORTHUMBERLAND HOUSE,

GREEN LANES,

FINSBURY PARK, N.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Mental and Nervous Affections. Highly situated, facing Finsbury Park.

Voluntary Boarders received without certificates.

For particulars apply to the Resident Physician.

Telephone No. 888 North. Telegrams: "SUBSIDIARY, LONDON."

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

Associated Rooms, Private Rooms, or Suites. Very moderate terms. Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.

Telephone: 494 Brixton

SPRINGFIELD HOUSE

Near BEDFORD.

(Telephone No. 17.)

A PRIVATE HOME for Mental Cases, established in 1837, surrounded by extensive grounds, reconstructed and modernised.

Terms from 3 guineas per week

(including Separate Bedrooms for all Suitable Cases).

For forms of admission, &c., apply to DAVID BOWER, M.D., as above, or at 5, Duchess-st., Portland-pl., W., on Tuesdays from 4 to 5.

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at COLTHURST HOUSE SCHOOL.

Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

TO MEMBERS OF THE MEDICAL PROFESSION.

IONIC MEDICATION, RADIANT HEAT,

MASSAGE, REMEDIAL EXERCISES, VIBRATION, HIGH FREQUENCY, SCHNEE FOUR CELL BATHS, NAUHEIM and AACHEN TREATMENTS.

EDGAR W. SHARMAN

(DIPLOMATE, FIRST PLACE WITH DISTINCTION, NATIONAL HOSP., LONDON)

39, Beaumont St., Devonshire St., W. 1.

Telephone No.: MAYFAIR 1324. Tel. Ad.: "SHARMANITE, LONDON."

PORTSMOUTH CORPORATION MENTAL HOSPITAL.

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received. Terms from 4½ gns. weekly.

Apply, Medical Officer, or Mrs Peele

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes. This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.F., the Med. Supt. [Tel. No. 307

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtsfold," Haslemere, Surrey. Telephone: 22 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams: Haynes, Brentwood 45.

Wandsworth Union. — Assistant MEDICAL OFFICER (Temporary), Male or Female, required at ST. JAMES INFIRMARY, Ouseley-road, Balham, S.W. 12. Salary £77s. per week with resident allowances.

Apply to the Medical Superintendent of the Infirmary.

Darlington Hospital.—Wanted, fully qualified HOUSE SURGEON, to commence duty January next. Salary £200 per annum, with residence, board, laundry, &c.

Candidates (either sex) are requested to forward copies of recent testimonials, together with qualifications and experience, to the Secretary, A. F. CREEK, 16, Greenbank-crescent, Darlington.

Dumfries and Galloway Royal Infirmary.—Wanted, a fully qualified RESIDENT HOUSE SURGEON, also an ASSISTANT HOUSE SURGEON (Male or Female), to commence duties at the end of the current year. Apply, giving full particulars with testimonials, and stating essential particulars, to Mr. J. SYMONS, Treasurer, 84, Irish-street, Dumfries, on or before 10th December, 1917.

Care of the Nation's Children.—War Work for Medical Women.—Required beginning of December, a qualified Medical Woman as RESIDENT at the BERMONDSEY MEDICAL MISSION for WOMEN and CHILDREN. A large Dispensary Practice. Good experience. Salary £150 to £200 per annum, with board and residence. Applications, with copies of testimonials, to be sent at once to Miss S. F. FOX, M.D., 44, Grange-road, Bermondsey, London, S.E. 1.

City of Manchester Education Committee.

— ASSISTANT SCHOOL MEDICAL OFFICER (Temporary Appointment).—Applications are invited for the post of Assistant School Medical Officer. Salary £400 per annum, with £10 allowance yearly for travelling expenses. The appointment is for the duration of the war, and terminable by three months' notice.

Applicants should state if they have had experience in the X-ray treatment of Ringworm and in the correction of errors of Refraction.

Applications to be sent in by December 8th, and addressed to

SPURLEY HEY, Director of Education.

Education Offices, Deansgate, Manchester, November 27th, 1917.

Bristol Royal Hospital for Sick

CHILDREN and WOMEN.—There is a vacancy for a LADY HOUSE SURGEON. Applications are invited from quite senior students who have had all the usual students' appointments, such as clerk, dresser, &c.

Salary for a qualified lady £150 per annum, and a senior student £100, with board, rooms, attendance, and laundry. Some experience or special distinction in giving Anæsthetics is desirable.

Applications, stating age, training, qualifications, and experience, with testimonials, must be sent to the undersigned.

27th November, 1917. J. E. SMITH, Secretary.

Manchester Royal Infirmary.—The

Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointment:—

RESIDENT SURGICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

The appointment is subject to the provisions of the by-laws as to notice of resignation.

Applications, stating age and qualifications, should be sent to the undersigned by the 10th December 1917. By order.

FRANK G HAZELL, General Superintendent and Secretary.

23rd November, 1917.

County Borough of Stoke-on-Trent.—

TUBERCULOSIS SANATORIUM.—RESIDENT ASSISTANT MEDICAL OFFICER.—The Town Council invite applications from qualified ladies or gentlemen (the latter to be ineligible for Military Service) for the position of Resident Assistant Medical Officer at the Stanfield Tuberculosis Sanatorium. Salary £250 per annum, with board and residence provided. The person appointed will be required to act under the directions of the Tuberculosis Officer, and assist him generally.

Applications, stating age, qualifications, and experience, accompanied by copies of not more than three recent testimonials, and endorsed "Resident Assistant Medical Officer," should be delivered to the undersigned not later than 10 A.M. Thursday, 6th December, 1917.

E. B. SHARPLEY, Town Clerk.

Town Hall, Stoke-on-Trent, 20th November, 1917.

The Milroy Lectures on State MEDICINE and PUBLIC HEALTH.

The Council of the Royal College of Physicians are prepared to receive applications for the office of MILROY LECTURER for 1919.

Applications must be addressed to the Registrar, Royal College of Physicians, Pall Mall East, on or before January 1st, and should contain a statement of the division of the subject selected by the candidate.

The course must comprise not less than "three" nor more than "six" Lectures.

The Lectures are to be given on Tuesdays and Thursdays in February or March, 1919.

A copy of Dr. Milroy's "Suggestions" on the subject of his bequest, and information as to the emolument, may be obtained from

November, 1917. J. A. ORMEROD, M.D., Registrar.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

Kent Education Committee.—The

Committee invite applications for the appointment of a Temporary SCHOOL MEDICAL INSPECTOR and MEDICAL OFFICER of SCHOOL CLINIC, to act under the supervision of the School Medical Officer The appointment is open to Lady doctors and to medical men ineligible for Military Service.

The selected candidate will be required to devote his or her whole time to the duties of the office.

The salary offered is at the rate of £385 per annum, together with travelling and subsistence allowances.

Applications, stating age and full qualifications, and accompanied by copies of three recent testimonials, must be forwarded to the undersigned, to arrive not later than December 6th, 1917.

No official form of application will be issued and canvassing will be considered a disqualification.

ALFRED GREENWOOD, M.D., School Medical Officer.

Sessions House, Maidstone, November 20th, 1917.

City of Birmingham Education Committee.

— SCHOOL MEDICAL SERVICE. — Temporary ASSISTANT SCHOOL MEDICAL OFFICER. — Applications are invited from duly qualified candidates for the post of Temporary Assistant School Medical Officer. Commencing salary £300 per annum, plus £5 per annum travelling expenses. Forms of application and further particulars can be obtained from the undersigned

JNO. ARTHUR PALMER, Secretary of Education.

Education Offices, Council House, Birmingham, 21st November, 1917.

West London Hospital, Hammersmith-road, W. 6.

—Evening Clinics for Venereal Diseases in connexion with the L.G.B. Scheme.—A limited number of appointments for CLINICAL ASSISTANTS, tenable or six months, will be vacant on January 1st next.

Applications, by letter, are invited for the same. These should reach me by Tuesday, December 11th. Candidates must attend the Committee on Thursday, December 13th next, at 4 P.M.

A. BUTTERIDGE, Secretary.

The Victoria Hospital for Children,

Tite-street, Chelsea, S.W. (104 beds).—The Committee invite applications for the post of HOUSE PHYSICIAN, vacant on January 1st, 1918. Open to qualified Men (ineligible for Military Service) or Women.

Candidates for the post must hold Medical and Surgical qualifications, and be registered under the Medical Act. Salary £200 per annum, with board, lodging, and washing.

Applications, with not less than three copies of recent testimonials, should be sent to the Secretary on or before December 17th.

By order.

H. G. EVERED, Secretary.

Birmingham and Midland Eye Hospital, Church-street, Birmingham.

—Applications are invited from duly qualified Practitioners for the post of HOUSE SURGEON at this Hospital. Male applicants must be ineligible for Military Service.

The Hospital has 120 beds, of which 40 are set aside for Military patients. The Out-patient attendances number about 250 per day.

Salary £200 per annum, with £5 laundry allowance. Separate bed and sitting-rooms are provided for each member of the resident staff, which consist of a Resident Surgical Officer and two House Surgeons.

Applications, with copies of testimonials, should be addressed to the undersigned, from whom all further information can be obtained.

J. W. PEARCE, General Supt. and Secretary.

Bristol General Hospital. — The

Committee invites applications for the post of CASUALTY HOUSE SURGEON. Salary at the rate of £175 per annum, with board, residence, &c., provided in the house. The appointment is for six months from 17th January next.

Candidates (ineligible for Military Service) must be registered under the Medical Acts, and produce testimonials of good personal character and ability, and must have had recent experience in the administration of Anæsthetics.

Applications, stating age, with copies of testimonials, should be forwarded to the undersigned by Monday, December 17th, from whom further particulars may be obtained.

THOMAS W. GREGG, Secretary.

Ilford Urban District Council.—

Appointment of TEMPORARY MEDICAL OFFICER OF HEALTH.—The Urban District Council of Ilford invites applications from properly qualified Medical Men, with the Diploma of Public Health or similar qualification, for the office of Temporary Medical Officer of Health, Temporary School Medical Officer, and Temporary Medical Superintendent of the Isolation Hospital and Sanatorium during the absence of the Medical Officer of Health on Military Service. Salary will be at the rate of £550 per annum.

The person appointed will be required to devote his whole time to the duties of the office and to reside within the Urban District of Ilford.

Candidates must be ineligible for Military or Naval Service.

The appointment will be subject to one month's notice on either side.

Applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials (which will not be returned), endorsed "Temporary Medical Officer of Health," must be sent in at once to the undersigned.

Canvassing members of the Council, directly or indirectly, is prohibited and will disqualify. By order.

ADAM PARTINGTON, Clerk and Solicitor to the Council.

Town Hall, Ilford, 27th November, 1917.

City of Manchester.—The Sanitary

Committee of the Corporation of Manchester require the services of a fully qualified Whole-time LADY MEDICAL OFFICER with experience in the treatment of Children's Diseases, to hold (under the direction of the Medical Officer of Health) Consultations and Infant Clinics at the Maternity and Child Welfare Centres of the Manchester Corporation, and (under the like direction) to perform such other duties as appertain to the office.

The salary will be £400 per annum.

A statement of the duties and conditions of the office may be had on application, in writing, to the Medical Officer of Health, Civic Buildings, 1, Mount Street, Manchester.

Applications, stating age and experience, and endorsed on the envelope "Medical Officer, Child Welfare," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than Friday, December 14th, 1917, and be accompanied by not more than three recent testimonials.

The successful candidate will be required to contribute to the Corporation Officers' Thrift Fund, and to execute their Deed of Service.

Canvassing in any form, oral or written, direct or indirect, is prohibited. THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, November 27th, 1917.

Charing Cross Hospital. — Resident MEDICAL OFFICER required. Salary £400 per annum, with quarters and board. Administrative experience essential. Applications to be sent to the undersigned not later than December 8th.
WALTER ALVEY, Secretary.

General Lying-in Hospital, York-road, Lambeth.—RESIDENT MEDICAL OFFICER required for January, 1918. Appointment for three months. Salary £100 per annum with board. Applications, with three testimonials, to be sent to the Secretary.

Royal Surrey County Hospital, Guildford (200 beds).—Wanted, HOUSE SURGEON (Male or Female). Board, residence, and laundry found.
Applications, giving essential particulars, together with copies of testimonials, to be sent to the Secretary.

Locum Tenens wanted for the County ASYLUM, Whittingham, Preston, Lancs. Applicants must be single and not eligible for the Army. Terms £7 7s. per week, with furnished apartments, board, and washing.
Apply, with copies of testimonials, to the Medical Superintendent.

Medical Officer with good Surgical experience, also Lady DOCTOR, required for hospital for Serbian civilians on Salonica front. For particulars, address Lady Grogan, Serbian Relief Fund, 5, Cromwell-road, S.W.

York County Hospital (230 beds, including 110 for Soldiers).—HOUSE PHYSICIAN wanted (Lady). Candidates must be qualified and registered. Applications stating age, with copies of three recent testimonials, to be sent at once to the undersigned. Salary £200, with board, residence, &c.
November 27th, 1917. FREDK. NEDEN, Secretary and Manager.

Queen Mary's Hospital for the East END (170 beds).—Wanted, HOUSE SURGEON. Applications should be addressed to the undersigned, of whom particulars may be obtained.
Male applicants must be ineligible for Military Service.
A. W. SCRIVENER Secretary.

Royal Free Hospital, Gray's Inn-road, W.C.—Applications are invited from duly qualified and registered Medical Women for the posts of MEDICAL and SURGICAL REGISTRARS. Applications should be sent to the Secretary on or before December 15th, 1917, and from whom further information may be obtained.
REGINALD R GARRATT, Secretary.

Birmingham and Midland Ear and THROAT HOSPITAL, Edmund-street, Birmingham.—CLINICAL ASSISTANT wanted to assist in the Out-patient Department two mornings per week.
Applications are invited for the above appointment. Candidates must be duly qualified. Women eligible. Salary £50 per annum. Applications to be sent to the Hon. Secretary of the Medical Board.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E. — HOUSE SURGEON 1st January.
Six months' appointment. Salary £100 per annum, with board, residence, and washing.
Candidates should be doubly qualified, but applications from Fifth-year Students will be entertained. T. GLENTON-KERR, Secretary.
28th Nov., 1917. Telephone: Dalston 305.

London Lock Hospital, Dean-street, Soho, W.—The Board of Management invite applications for the post of HOUSE SURGEON at the Male Hospital. Candidates must be doubly qualified and duly registered, and be ineligible for Military Service. Salary at the rate of £150 per annum, with furnished rooms, full board, and washing. The appointment to be for six months. Duties commence January 1st, 1918. Applications, enclosing copies of three recent testimonials, to be sent to the undersigned, at the Chief Offices, 283, Harrow-road, W. 9, by the first post on December 6th, 1917.
By order of the Board.
Chief Offices, 283, Harrow-road, W. 9. H. J. EASON, Secretary.

Borough of Poole. — Appointment (Temporary) of MEDICAL OFFICER OF HEALTH and SCHOOL MEDICAL OFFICER.—The Corporation of Poole invite applications for the post of Temporary Medical Officer of Health of the Urban and Port Sanitary Authorities and School Medical Officer for the duration of the war.
Applicants must hold a diploma in Sanitary Science, Public Health, or State Medicine. The person appointed will be required to reside within the Borough.
Applications, stating age, qualifications, experience, other essential particulars, and date when able to commence duties, accompanied by copies of not more than three recent testimonials, must be sent to me not later than the 8th December next.
The Council prefer a whole-time officer, but they are prepared, if necessary, to consider an application which involves part-time service only.
Canvassing will be regarded as a disqualification.
CHARLES LISBY, Town Clerk.
Town Clerk's Office, Poole, 23rd November, 1917.

St. John V.A.D. Hospital, Hull (400 Military and Naval Beds).—Lady who has had previous experience as Matron in hospital where Military patients have been treated, required as MATRON early in the New Year.
All applications should be sent to the Commandant, St. John V.A.D. Hospital, Cottingham-road, Hull.

P & O. Company require Ship's SURGEON. Ineligible for Military Service.—For particulars, apply 122, Leadenhall-street, London, E.C.3.

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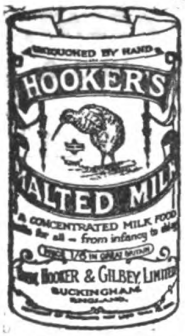
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THE LANCET.

No. 4919. LONDON, SATURDAY, DECEMBER 8, 1917. Vol. CXCIII.

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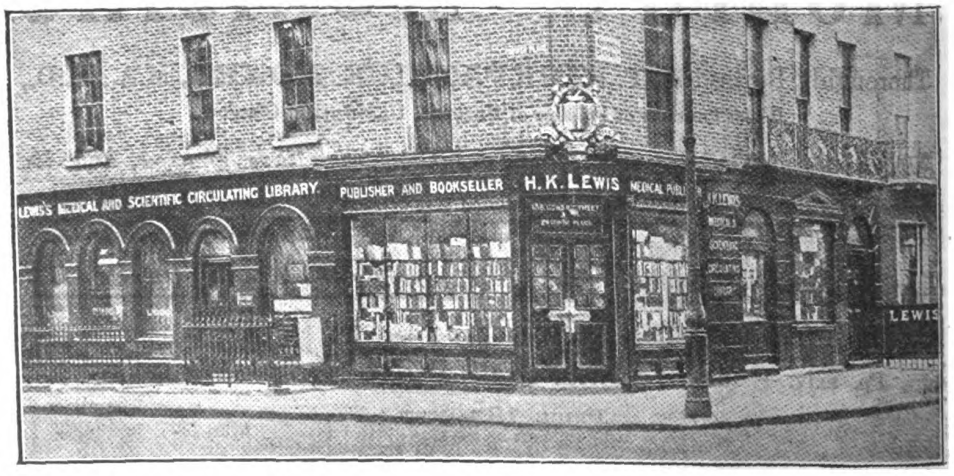
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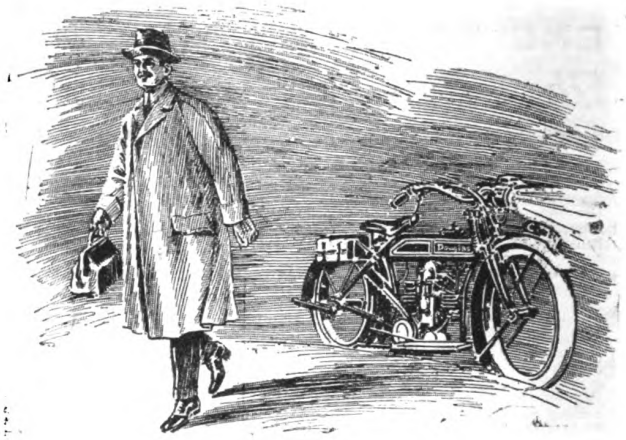
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Saberton, Dr. Claude	1	1	0
Sadler, Dr. Ernest A.	5	0	0
Sandoe, Dr. J. W.	1	1	0
Scatchard, Dr. J. P.	2	2	0
Scott, Dr. Chas. T.	1	1	0
Scott, Dr. F. S.	2	2	0
Scott, Surg.-Major H.R.	2	2	0
Seal, Dr. Philip	1	1	0
Sellers, Major Arthur, R.A.M.C. (T.)	2	2	0
Sellers, Dr. W. H. Irvine	1	1	0
Seth-Smith, Dr. D. L.	1	1	0
Sharp, Dr. Margaret S.	5	0	0
Sharpe, Dr. F. A.	1	1	0
Shoyer, Dr. A. Y.	5	0	0
Siddall, Dr. J. B.	1	1	0
Small, Dr. George S.	5	5	0
Smith, Dr. Hester Dill	2	0	0
Smith, Dr. T.	2	2	0
Smith, Sir Rudolph Hampden, Bt., M.D.	5	0	0
Soutar, Dr. Jas. Grey	5	5	0
Speirs, Dr. W. R.	1	1	0
Stallard, Mrs. B. E. Walters	5	0	0
Stansfield, Dr. F. W.	2	2	0
Stephens, Mr. Lockhart E. W.	5	5	0
Stevens, Mr. T. G.	10	10	0
Stewart, Dr. J. H.	1	1	0
Stillwell, Dr. R. J.	5	5	0
Stoney, Dr. Florence	2	2	0
Strain, Dr. W. L.	5	5	0
Street, Major C. T.	3	3	0
Sugden, Dr. Samuel	1	1	0
Swainson, Capt. E. A. C., R.A.M.C.	1	1	0
Tanner, Dr. R. C.	2	2	0
Taylor, Dr. Herbert	1	1	0
Tennant, Dr. Temperance	1	1	0
Thomas, Dr. R. J. Percy	1	1	0
Thompson, Mr. A. Hugh	10	10	0
Thompson, Dr. Theodore	5	5	0
Thomson, Dr. Alexis	5	5	0
Thomson, Dr. George	1	1	0
Thurn, Dr. R. M.	1	1	0
Tibbles, Dr. Sydney	1	1	0
Turnbull, Dr. H. M.	1	1	0
Turner, Dr. F. J.	0	5	0
Turner, Dr. S. Duke	2	2	0
Unwin, Mr. H. R.	2	2	0
Urquhart, Mr. G. H.	2	2	0
Verdon, Dr. Francis	2	2	0
Vickers, Capt. H., R.A.M.C. (T.)	1	1	0
Wallis, Dr. G. F. C.	0	10	6
Wardlaw, Dr. Robert	1	1	0
Watkins, Dr. Paul	5	5	0
Watts, Silvester, Dr. T. H. E.	1	11	6
Weekes, Capt. R., R.A.M.C.	1	1	0
Whipham, Dr. T. T.	5	0	0
Whitby, Dr. E. Vickers	1	1	0
Whitley, Dr. H.	1	1	0
Whitmore, Dr. W. B.	5	5	0
Wiglesworth, Dr. J.	1	1	0
Wilcox, Mr. R. L.	2	2	0
Wilkinson, Dr. Robt.	1	1	0
Williams, Mr. George	5	5	0
Williams, Capt. Gwynne, R.A.M.C. (T.)	2	2	0
Williams, Dr. Samuel	5	5	0
Wills, Dr. W. A.	10	0	0
Winckworth, Dr. C. E.	2	2	0
Winckworth, Dr. Wadham	5	5	0
Winstanley, Dr. R. W.	5	0	0
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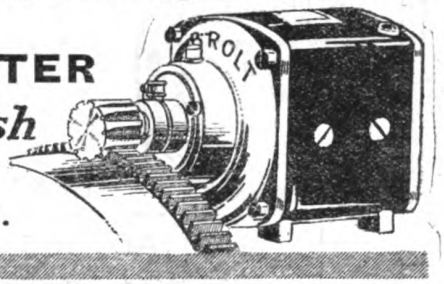
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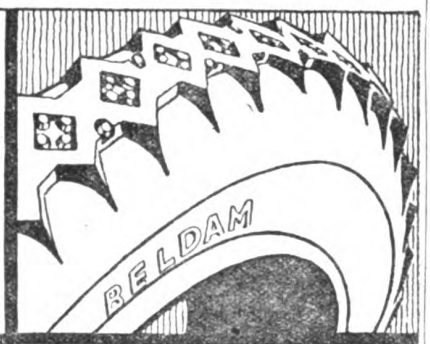
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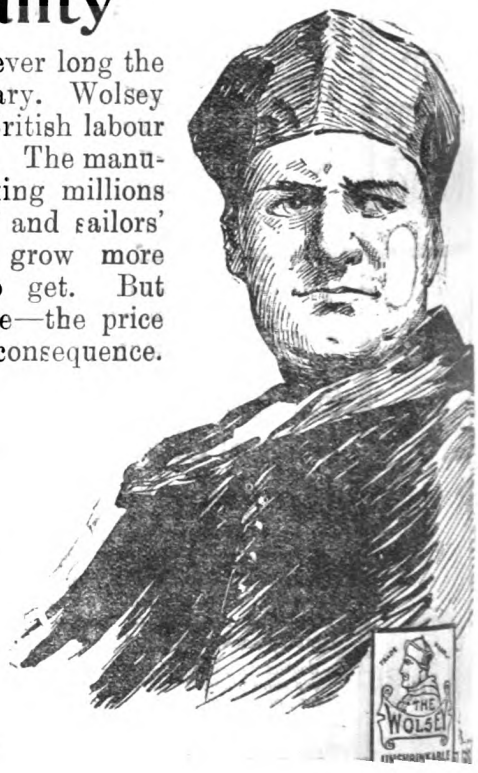
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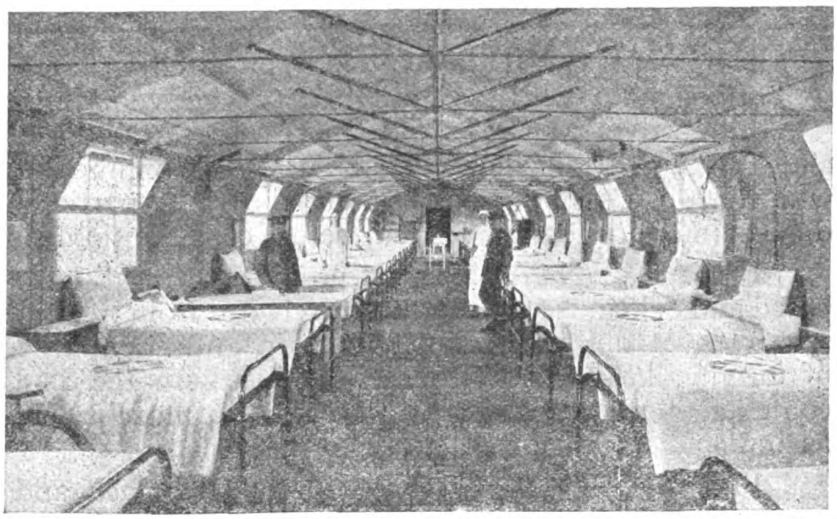
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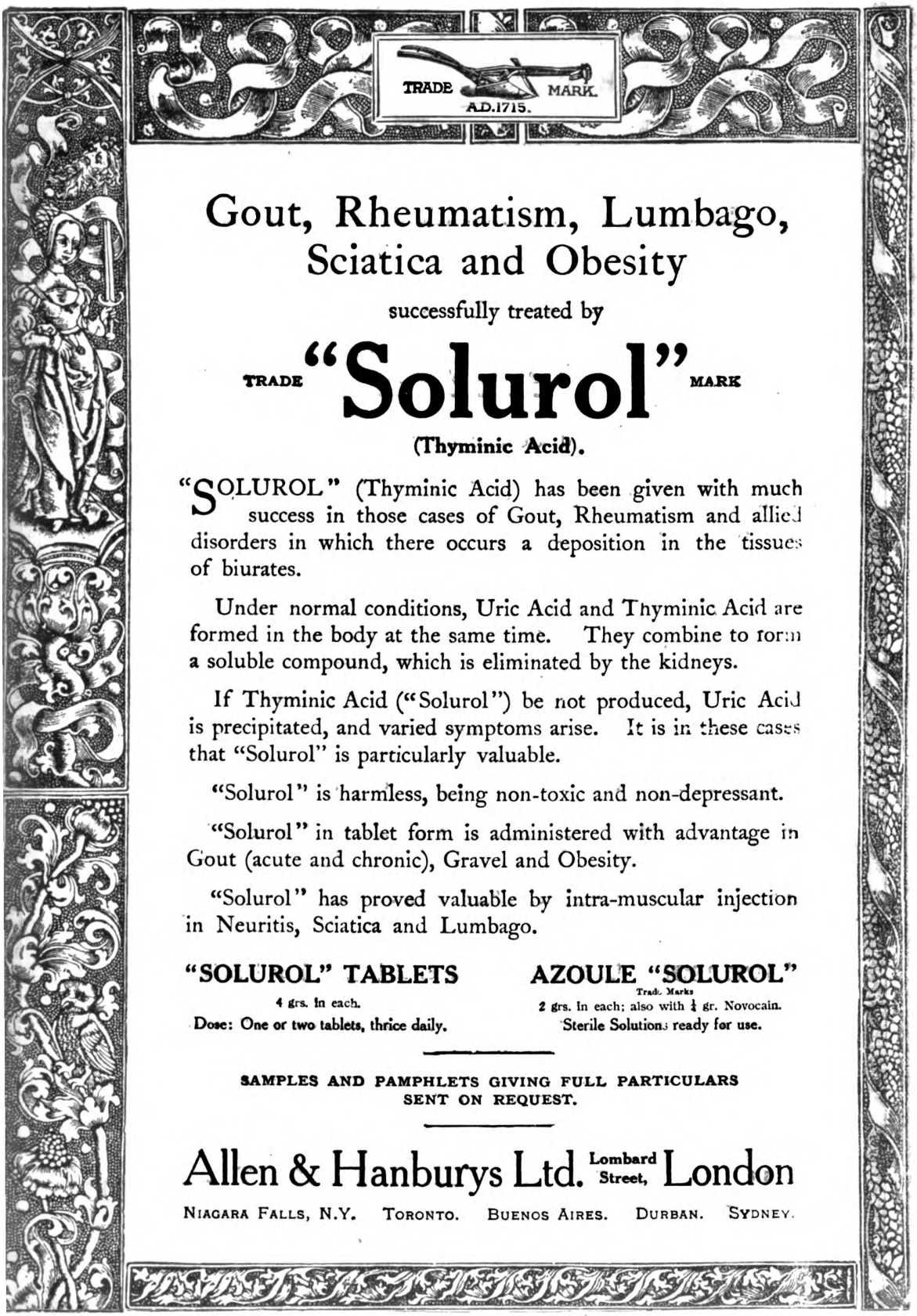
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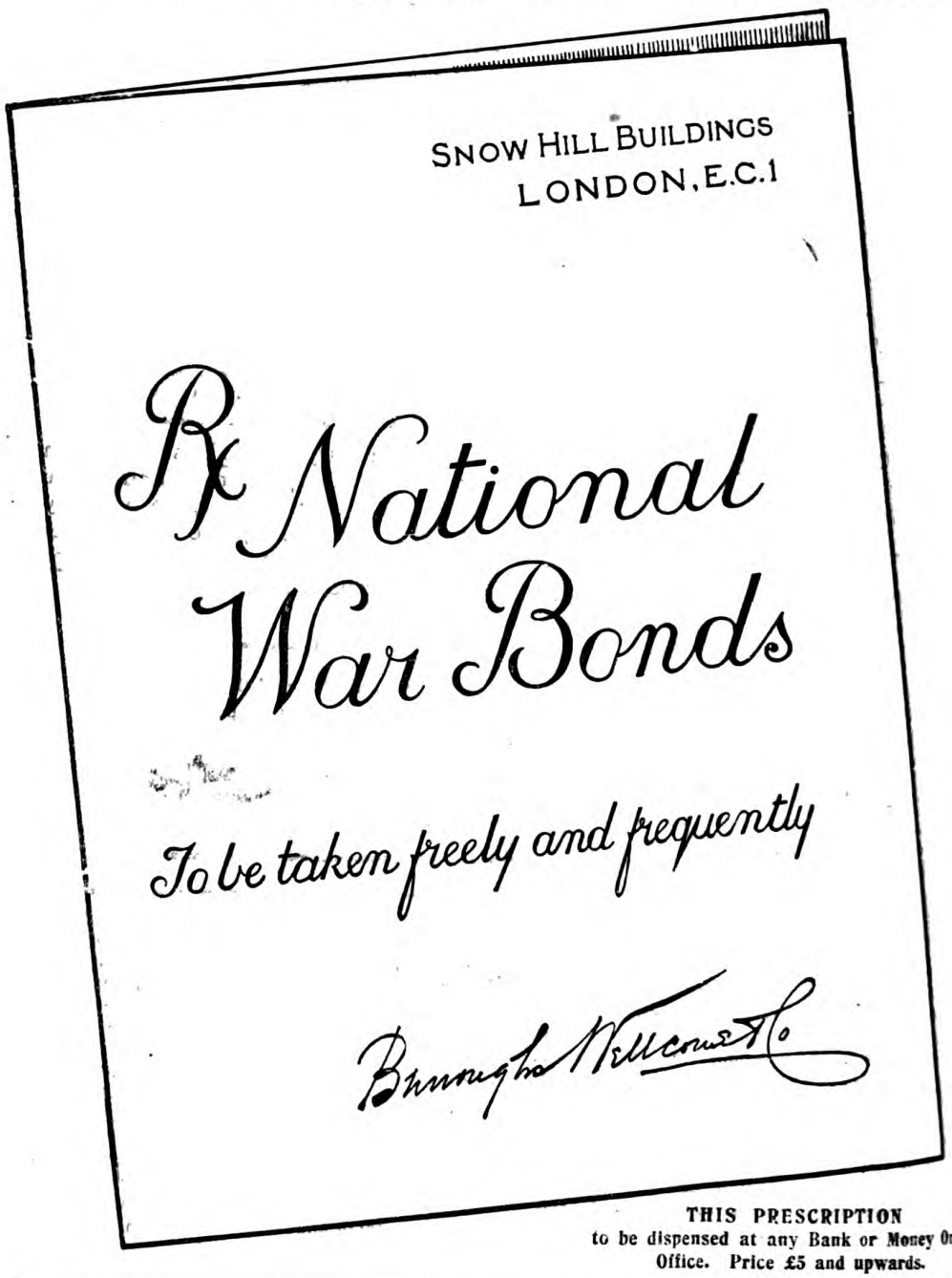
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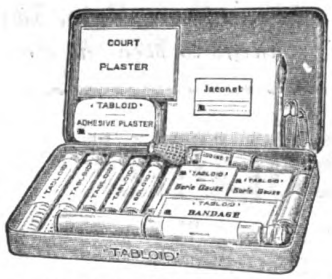
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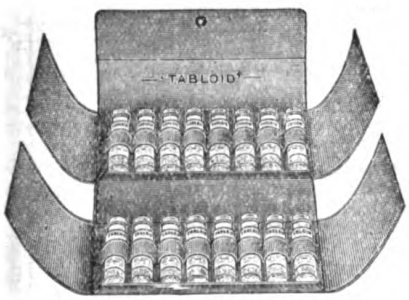
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[See also pages 21, 22, & 23.

A Consideration OF RECENT SEROLOGICAL WORK ON THE MENINGOCOCCUS.

By F. W. ANDREWES, M.D. Oxon., F.R.C.P. Lond., F.R.S.,

MAJOR, R.A.M.C. (T.); PATHOLOGIST TO ST. BARTHOLOMEW'S HOSPITAL; PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON.

ONE of the difficulties which beset attempts at the classification of bacteria is the fact that within the limits of what, on general biological grounds, would be deemed a good "species" there are often found sub-species or races which differ only in their serological properties. In some cases the differences are slight and of little practical importance: we can employ a single strain of the typhoid bacillus for purposes of general immunisation against the disease. In other cases the differences are sharply defined, as in the case of the pneumococcus, and here a single strain seems of little value for purposes of general prophylaxis or serum treatment. But in any case the differences between such parallel strains are of a very subtle kind and are revealed only in the response of the animal body to the presence of the bacterial protein; slight differences in the latter evoke slightly different antibodies.

The property of immune serum which has chiefly been employed in defining serological races of bacteria is agglutination, though other reactions can also be used, such as fixation of complement or protective power in animals. As regards agglutination, we possess three methods of employment—namely, (1) agglutination; (2) agglutinogenic power; and (3) the power of absorbing agglutinin. Of these three methods the first is the simplest, but the third the most accurate, and of all it may be said that, while a positive result is of definite value, a negative result is not invariably conclusive.

One of the latest organisms to be submitted to close serological scrutiny is the meningococcus, because the recent outbreak of cerebro-spinal fever has brought it into prominence. The present is perhaps an opportune moment for a short review of the work accomplished in this country since the beginning of the epidemic in the winter of 1914–15, for there has just appeared an important series of papers on the subject—"Reports to the Local Government Board on Public Health and Medical Subjects (New Series, No. 114): Further Reports on Cerebro-spinal Fever."

STATE OF KNOWLEDGE AT BEGINNING OF EPIDEMIC.

Before discussing this recent work it will be convenient to consider the state of our knowledge when the epidemic commenced. When Still, in 1898, described the coccus he found in the posterior basic meningitis of infants, he was in some doubt as to its identity with the organism which Weichselbaum had described 11 years previously from cases of cerebro-spinal fever in Vienna. His chief reason for doubt was the fact that his coccus showed much more prolonged vitality on ordinary culture-media. Still's organism is now, however, universally recognised as a true meningococcus, just as the posterior basic meningitis of infants is admitted to be an endemic form of cerebro-spinal fever.

Arkwright, in 1909, was unable by serological methods to establish any specific differences between epidemic and sporadic strains of the meningococcus; the differences between individual members of each group were as great as any found between the two groups.

Serological differences amongst strains of meningococci had been established in Germany by Kutscher; he employed absorption methods, by which he was able to show marked differences amongst certain spinal and pharyngeal strains, though not of a kind to prove any sharp distinction between the spinal strains and those derived from the throats of non-contacts in Berlin. Further work in Germany was carried out on the same lines by numerous observers, largely with the object of establishing the identity or non-identity of meningococcus-like organisms from the healthy pharynx with the classical organism. Improved methods of agglutination were introduced, but these later observers were no more able than Kutscher to demonstrate constant differences between spinal and pharyngeal strains greater than existed amongst spinal strains alone. The term "pseudo-meningococcus" was, however, introduced for pharyngeal strains which could not positively be identified with the genuine organism.

The prolonged and elaborate investigations of Elser and Huntoon in the United States were disappointing in their issue. They found that a large proportion of the strains of meningococcus with which they worked were relatively inagglutinable, at least by the methods they employed; but they were able to show that such strains, though inagglutinable, might yield a serum of good agglutinating power, if not for themselves at least for certain other strains.

The first attempt at a definite grouping of meningococc was made in France by Dopter. In 1909 he recognised, in the pharynx of contacts, cocci which, while in other respects resembling the meningococcus, were not in serological conformity with that organism. He termed these "parameningococci," and two years later he was able to show that they could set up meningitis, for he found them in cases of the sporadic disease. In cases of such infection which were not benefited by ordinary antimeningococcal serum, he claimed a curative value for a serum prepared with the parameningococcus. Other French workers confirmed the distinction, and amongst parameningococci themselves indications were found of a further serological subgrouping into three varieties.

The state of our definite knowledge on this subject when the outbreak of cerebro-spinal fever in England began to assume epidemic dimensions was therefore, shortly, as follows. It was recognised—

1. That the causal agent in epidemic cerebro-spinal fever and in the endemic posterior basal meningitis of infants was the meningococcus. No cultural distinctions could be made between the cocci found in these two affections, nor could any adequate or constant serological differences be established between them.

2. That the meningococcus was divisible into certain subgroups by serological means, and notably by the absorption of agglutinin test. The number of such sub-groups was ill-defined, but they appeared to fall into two main divisions, designated by Dopter "meningococci" and "parameningococci" respectively.

3. That from the pharyngeal mucus, both of contacts and non-contacts, cocci could often be cultivated which had all the biological characters of the meningococcus. In some cases complete serological identity with that organism could be established; in other cases it could not, and some writers stigmatised such unplaced forms as "pseudo-meningococci."

RECENT RESEARCH WORK IN THIS COUNTRY.

Turning now to recent work in this country, we find it prompted by two immediate needs. The first was the provision of an adequate antiserum for treatment, since the stocks available proved of little utility. The second lay in providing means for recognising the meningococcus, especially in the pharyngeal secretions. Apart from two sets of observations carried out by Arkwright and by Ellis in France, both of which tended to support Dopter's classification of meningococci into two divisions, the work has been carried out by two independent groups of observers in this country, a military and a civil.

On behalf of the military authorities the Medical Research Committee organised a numerous band of workers all over the country, under the guidance of Lieutenant-Colonel M. H. Gordon, at the Central Cerebro-spinal Fever Laboratory at Millbank. This work has been carried out entirely amongst the military population with the special object of the prompt control of the disease. On the other hand, the Local Government Board turned the energies of its bacteriologists in the laboratories at Carlisle Place to a detailed study of the meningococcus from a more abstract point of view, but with special reference to the nature of such cocci from the pharynx of non-contacts. The material they employed was mainly from the civil population.

It is necessary to emphasise here the differences between these two sets of researches, both in their immediate objects and in the conditions under which they were carried out, for we can thus understand how certain differences have arisen in the conclusions reached.

WORK CARRIED OUT AT THE CENTRAL CEREBRO-SPINAL FEVER LABORATORY

Let us consider first the work accomplished in the Central Cerebro-spinal Fever Laboratory, the results of which have

been published in a number of papers in the *Journal of the Royal Army Medical Corps* and elsewhere, and recently in a special report issued by the Medical Research Committee.[1] The tasks undertaken by Lieutenant-Colonel Gordon and his colleagues have been arduous and very varied in character and have resulted in many advances in practical measures of diagnosis and treatment, including an improved culture-medium adapted for general use and greatly improved methods for the cure of carriers.

But I am here concerned only with one branch of their work, that relating to the serological differentiation of meningococci. This was accomplished by means of the absorption of agglutinin method applied to a large number of spinal strains. By this means Gordon separated the strains into four groups, of which two were common and two comparatively rare, though sometimes numerous in certain local outbreaks: he termed them Types I., II., III., and IV. Later experience showed that substantially all the spinal strains met with in military cases of cerebro-spinal fever could be referred to one or another of these types, which were very properly regarded as the "epidemic types" concerned in the existing outbreak. It was also shown that by mere agglutination tests, quantitatively carried out, a coccus could almost always be referred to its type, without the necessity for absorption tests.

Captain Tulloch has confirmed these results and somewhat amplified them. By employing the absorption test he has demonstrated the existence of three sub-groups in Gordon's Type II.—always the most puzzling type when reliance was placed on a single serum. Out of 104 spinal strains, fully tested, he was able to refer 101 to Gordon's four types; one of the exceptions was from a case of posterior basic meningitis.

Certain results of much practical importance followed the application of this knowledge.

1. By supplying typical strains to those engaged in making serum for therapeutic use, sera were prepared of greatly increased efficacy in treatment.

2. It was demonstrated by several workers that the type of meningococcus invariably present in the pharynx early in the disease was always the same as that found in the cerebro-spinal fluid. This not only confirms the idea that the disease is spread by means of the naso-pharyngeal secretions but also suggests that every case of cerebro-spinal fever arises in a person who is already a carrier.

3. It became possible in many cases to trace the spread of the disease by the identification of carriers bearing given types of the coccus, thus facilitating epidemiological investigations.

4. When the carriers in any locality became too numerous to deal with, a test was afforded by which the carriers of epidemic types of the coccus could be sorted out, as presumably the most dangerous, and separately treated.

It will be realised that this serological work had a direct bearing on the immediate control of the disease amongst the military population, and it was remarkable for the energy and rapidity with which it was carried out. It has been supplemented since by further experimental observations supporting the more or less specific nature of the bodily reactions against the four types of meningococci.

But although we must regard the work as well adapted for the purposes in view it must be remembered that the material which formed its basis was drawn from a limited field, and we must beware of assuming that its results convey the whole truth about the meningococcus. Gordon's conclusions are drawn almost solely from a single epidemic of the disease as it affects adults, and in his latest report he assumes an attitude which appears to me too dogmatic. He speaks of his four types as "species"—a claim which no biologist could support—and he excludes from the true meningococci those pharyngeal strains which fail to agglutinate with his four type sera, calling them "pseudo-meningococci." Here I find myself in disagreement with him.

During the past two years I have submitted the cocci from all cases of cerebro-spinal fever at St. Bartholomew's Hospital to agglutination with the four sera kindly supplied me from time to time by Major Hine at Millbank. Twenty-six cases have been in children under 5 years old, and 8 of these have agglutinated so poorly with the sera that I could not regard them as conforming fully to the types—one, indeed, failing to agglutinate at all. Although 18 of the cases did conform to one or other of the four types, I am disposed to believe that the meningococcus in the posterior basic meningitis of infants not rarely presents strains which differ from those of the epidemic form of the disease in adults. And if this is so the pharyngeal cocci from non-contacts cannot necessarily be excluded from the group of true meningococci on serological grounds alone. The most which we can legitimately assert is that such non-conforming or imperfectly conforming cocci are not examples of the epidemic types seen in adults during the present outbreak.

[1] Special Report Series, No. 3. Bacteriological Studies in the Pathology and Preventive Control of Cerebro-spinal Fever among the Forces during 1915 and 1916.

RESEARCHES OF LOCAL GOVERNMENT BOARD OBSERVERS

Let us now pass to the researches carried on by the Local Government Board observers, which have more immediately prompted this review. A year ago they presented preliminary reports based on their first year's study of the meningococcus, and especially of "non-contact" strains, in which they arrived at conclusions in a measure divergent from Gordon's. They were unable to recognise more than two main serological groups of the coccus, and these they found connected by transitional and debatable forms. So far as the number of groups is concerned the difference is apparent rather than real, for Gordon admits relationship between his Types I. and III., which are often brought down by the same serum, though unequally, and similarly between his Types II. and IV.

The present report contains what we may assume to be the final conclusions of the Local Government Board workers at the end of two years' work on the races of the meningococcus. They are embodied in six papers by as many different writers, all having as the primary object of research the relation between the cocci obtained from the spinal fluid of cerebro-spinal fever and similar organisms from the naso-pharynx, chiefly in non-contacts. In other words, the aim was to ascertain the distribution of the infecting agent amongst the population at large, and the fundamental point was to establish the relation between the pharyngeal cocci and known pathogenic strains. The problem was regarded as a pure piece of scientific research and was carried out in what may be described as an atmosphere of academic seclusion and with no need for haste. It is probable that no micro-organism has ever received a more laborious and impartial study than we find recorded in this series of papers.

Summary of Results of Investigation by Dr. Griffith.

As an example of the methods pursued by the Local Government Board workers, it will be convenient to take the paper by Dr. F. Griffith, since it is perhaps the most elaborate, and contains some interesting and original views as to the meningococcal protein viewed as an antigen.

The first step was to prepare high-titre sera from known pathogenic strains of the meningococcus ("spinal sera") and Griffith's first table shows the result of testing 66 spinal strains against six such sera. The cocci fall into two fairly well marked groups—one reacting to two of the sera, the other to the remaining four sera, but not always to an equal degree. The grouping is not quite sharp, for some of these undoubtedly pathogenic strains are indeterminate, either relatively inagglutinable with the sera employed, or agglutinating equally with sera of the two groups. Nevertheless it is sufficiently striking, and Griffith showed in a former paper that it is correlated with a difference in fermentative power—the cocci of Group I. having a preference for maltose and those of Group II. for glucose. In a general way Griffith's Group I. appears to correspond with Gordon's Types I. and III. and with the meningococcus of Dopter, while Group II. corresponds with Gordon's Types II. and IV., and with the parameningococcus of Dopter.

In Griffith's second table we find the reactions of 86 pharyngeal meningococci to the same six spinal sera. The result exhibits a similar grouping, but with the difference that representatives of Group I. are much less numerous amongst the pharyngeal than amongst the spinal strains, while indeterminate forms are far more numerous.

The next step was to prepare sera from pharyngeal strains of the meningococcus, and thus to test their agglutinogenic powers. Tables are given showing the effect of such sera upon both spinal and pharyngeal strains. The latter are found to be, on the whole, less well defined than the spinal in agglutinogenic power, as they had proved to be in agglutinability, but this indefiniteness is only what had been already observed in certain spinal strains. As a rule, the

spinal cocci were well agglutinated by the pharyngeal sera, though seldom to full titre.

Finally an elaborate series of absorption experiments is recorded, dealing with a large number of cocci and sera, both spinal and pharyngeal. For the details of these the paper itself must be consulted, for they are too numerous and complicated for summary in a short review. But they lead up to a subdivision of the two main groups into a number of sub-groups, and to a hypothesis as to the varying structure of the meningococcal antigen which is interesting and novel, and which receives considerable support from the observations described.

Put briefly, the hypothesis is as follows. The antigen of the meningococcus consists of two main components, present in unequal amount in the two main groups, each component again being liable to slight variations in structure. Group I. sera are shown to contain three agglutinins, which Griffith denominates A, B, and C, doubtless corresponding to three variations of the Group I. antigen: one, two, or three of these agglutinins may be present in any given serum. Group II. sera are similarly shown to contain at least four agglutinins. It is suggested that the meningococci of low pathogenicity, into which group a number of pharyngeal strains fall, contain antigens of simple structure belonging to Groups I. and II. in nearly equal proportions, and that in relation to the increase in pathogenicity the antigens become more and more complex, culminating in the epidemic types which have recently prevailed amongst spinal strains. All this is speculation, maybe, but it is speculation based on careful experiment, for which chapter and verse are fully given, and which offers a reasonable explanation of the observed facts. The final conclusion at which Dr. Griffith arrives is that all the forms, whether from the pharynx or meninges, which can be culturally identified with the meningococcus, are to be regarded as that organism in a biological sense.

Conclusions Reached by Other Investigators.

These conclusions are generally supported in the independent paper written by Dr. W. M. Scott. This paper is based on the examination of 60 strains of spinal and 71 strains of pharyngeal meningococci, distinct from those which were the subject of Dr. Griffith's work. Nineteen sera were produced from various spinal and pharyngeal strains, and were employed on much the same lines as Dr. Griffith had followed, the absorption test being largely used. The result was a subdivision into two main groups, but, perhaps because he worked with a different set of cocci and sera, the sub-grouping reached by Dr. Scott is not identical with that of Dr. Griffith. He found that in Group I. there was a main group and at least five subsidiary groups, and in Group II. a main group and at least two subsidiary groups. These differences are not surprising when it is considered that the numbers of strains studied were limited and the possible variations of the meningococcal antigen practically infinite. Dr. Scott has not indulged in the constructive speculations which form so interesting a feature of Dr. Griffith's report, but his work bears the same stamp of patient thoroughness, and his final conclusion as to the specific identity of spinal and pharyngeal meningococci is the same.

Although space fails for a review of the papers by Dr. Ponder and Dr. Lewis, it may be said that they are in complete accord in their general conclusions with those of the previous papers; Dr. Nabarro does not deal with the serological side of the question. By no means the least interesting paper in the report is that written by Dr. Eastwood, who contributes a philosophical essay on the whole subject of the absorption of agglutinin test and the division of bacterial species into serological sub-groups—an essay well worth careful study on account of his acute criticisms on the subject. He raises the question whether the differences between related antigens may not depend upon stereo-chemical configuration, and is disposed to argue in favour of this: it is an interesting suggestion, but one which at the present time seems insusceptible either of proof or disproof. As regards the unity of the meningococcus Dr. Eastwood sums up very definitely: he holds that cultural tests, adequately performed, suffice for the diagnosis of the species, though he is far from denying the utility of serological study for special purposes.

CAUSE OF DIVERGENT VIEWS.

From the foregoing short summary it will be apparent that the conclusions of the different Local Government Board workers are opposed to the views which Lieutenant-Colonel Gordon has recently expressed as to the delimitation of the meningococcus as a species. And I am bound to confess that their picture of the races comprised within its limits is one which appeals to me, as a biologist and evolutionist, more than Gordon's conception.

It is not difficult to see how the difference in opinion has come about: indeed, it seems the natural outcome of the different fields of work. If there is any truth in Griffith's view of relatively unspecialised races of the coccus often found in the normal pharynx, from which have arisen the pathogenic types, with their higher antigenic complexity, seen in the epidemic form of cerebro-spinal fever, it almost necessarily follows that the observer whose purview is limited, by the nature of his material, to the most specialised and virulent types, will arrive at different conclusions from the man who works largely with the unspecialised as well as with the specialised forms of the coccus. Of the two, the latter seems to me the more likely to be correct in his generalisations because his point of view is the wider. Gordon's work, on the other hand, is probably the better adapted for measures designed to control an epidemic; he has limited himself to his four "epidemic types" and very properly concentrated his attention on these as the immediately dangerous cocci. He only overshoots the mark when he elevates his types to the rank of species and seeks to exclude from the conception "meningococcus" the less virulent races which form the rank and file.

Two years ago Professor Bulloch, Professor Hewlett, and myself were invited by the Medical Research Committee to report upon the observations on cerebro-spinal fever made in various laboratories during the first year of the war. In our report we suggested that the meningococcus, widely spread as a saprophyte in the human naso-pharynx, was in non-epidemic times of insufficient virulence to attack any but the most susceptible of the population (posterior basic meningitis of infants), but that increase of virulence might enable the coccus to attack young adults also, and give rise to the epidemic form of the disease. At the time we put forward this suggestion we felt that it was an inference only, unsupported by any sufficient basis of observation or experimental fact. It is a great satisfaction to me to find, in the work recorded in this report to the Local Government Board, and especially in Dr. Griffith's paper, an analysis of the different races of the meningococcus which supplies the very basis of fact required to support the opinions we then ventured to put forward.

A WORKING HYPOTHESIS.

The picture which is left on my mind, on consideration of all the serological work which I have attempted to review, is a definite, though not a very simple one, and may, I think, be accepted as a fair working hypothesis in the present state of our knowledge. It is as follows.

The meningococcus is a single, definite species, recognisable by its cultural characters and fermentative reactions, and widely spread as a pharyngeal saprophyte—often a transitory one. In its most primitive form it is a relatively harmless organism, but even at this stage its protein presents two antigenic components. These two components are rarely evenly balanced, and from a serological point of view there emerge two primary races of the coccus—Group I. and Group II.—which correspond to the meningococcus and parameningococcus. The latter term is a misnomer since both are true meningococci. The term pseudo-meningococcus is equally erroneous; so far as it has any meaning it signifies a meningococcus of primitive type and low pathogenic power.

Under ordinary circumstances the bulk of the saprophytic meningococci of the pharynx are of this low type and mostly fall under Group II., though some are indeterminate. Even in non-epidemic times certain strains of these simple cocci possess sufficient virulence to attack the very young: hence we always have with us sporadic cases of cerebro-spinal meningitis.

For unknown reasons there is a tendency at times for certain strains to increase in virulence, and this is accompanied by an increased complexity in the structure of the antigen, taking different forms in different strains; we do not know whether the increased complexity is due to the increased virulence or vice versâ. The phenomenon is seen in both primary groups, but, on the whole, more in Group I. than Group II., so that, whereas in the less virulent forms Group II. is the commoner, in the more highly virulent ones the proportions

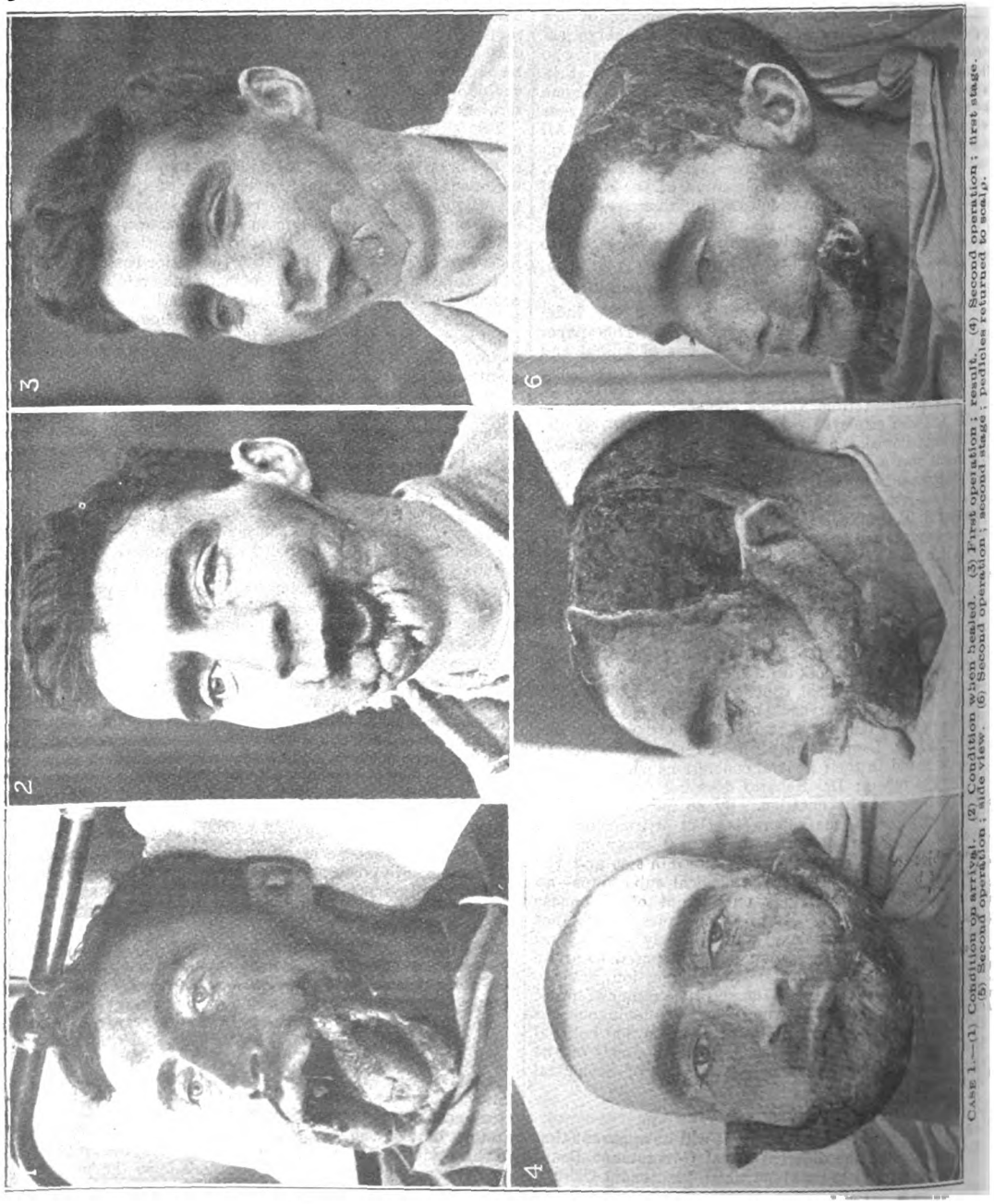
become more equal. When cerebro-spinal fever attains epidemic prevalence the virulent strains concerned stand out with relative but not absolute distinctness. The strains in question are possibly different in different epidemics: in the recent outbreak in this country four such strains are recognisable, two belonging to Group I. and two to Group II. The serological recognition of such epidemic types is of manifest importance, both for the preparation of suitable therapeutic sera and for the sorting out of the more dangerous types of carrier.

Such a conception as this appears in harmony with the observed facts in the recent epidemic, and serves to reconcile the apparent discrepancies in the results put forward by different workers on the subject.

TWO CASES ILLUSTRATING PLASTIC AND DENTAL TREATMENT.

BY H. D. GILLIES, F.R.C.S. ENG.,
MAJOR, R.A.M.C.: PLASTIC SURGEON TO THE QUEEN'S HOSPITAL, FROGNAL, SIDCUP.

CASE 1. *Re-formation of the chin and lower lip by double-pedicled bridge flaps and cartilage graft.*—This is shown as an attempt at restoration in that not uncommon class of gunshot wound of the jaw in which the whole body of the mandible and the soft overlying tissues have been blown away *en masse*. The photograph of this patient, taken soon after admission, sufficiently explains the extent of the lesion (*Fig.* 1, Case 1). It is an interesting point to note that this gallant fellow walked several miles to the dressing station on July 14th, 1916, during the battle of the Somme, and this very feat of endurance, maintaining, as it did, the upright position, may have prevented an emergency tracheotomy or even a worse fate. The loss of the lower lip and tissues of the chin is complete, while the amount of mandible remaining is represented by the thinned and atrophied



CASE 1.—(1) Condition on arrival. (2) Condition when healed. (3) First operation; result. (4) Second operation; first stage. (5) Second operation; side view. (6) Second operation; second stage; pedicles returned to mouth.

ascending ramus of the right side, and by the ascending ramus, angle, and one molar tooth on the left. The condition in January, 1917, after the healing process was complete and the general condition more satisfactory, is shown in Fig. 2 (Case 1).

At this stage the first operation, which took place on Feb. 27th, 1917, was performed under chloroform-oxygen anæsthesia in the sitting position, administered by Lieutenant R. Wade, at the Cambridge Hospital, Aldershot. The main features of the operation were the freeing of the tongue and the making of the flap which formed the basis of a new lip. The result, as far as it went, was satisfactory, as shown in Fig. 3 (Case 1), but the absence of the mental prominence as well as the loss of functions were left to be dealt with until a later stage.

A serious attempt to bulge out the new "lip" by traction from a head-piece was madein conjunction with Captain W. Kelsey Fry, M C., at the time of this operation, but it was badly tolerated and the result was not gratifying. In view of the general shortage of tissue, plastic flaps from the neck or cheek were not indicated, and in view of the success of the double-pedicled embedded flaps and of the experience one has had of single-pedicled bridge flaps it occurred to me that the employment of a double-pedicled bridge flap from the scalp would meet the case without fear of the blood-supply. By a bridge flap is meant one in which the pedicle lies over healthy skin, is divided from the grafted terminal portion after about ten days, and is then replaced into its original position. The double-bridge flap, though I believe original, is merely the logical development of double-pedicle embedded and single-pedicle bridge flaps, and it combines the advantages of a double blood-supply and of the provision of a flap well distant from the lesion.

In this particular operation, which took place on Sept. 20th, 1917, at the Queen's Hospital, Sidcup, Captain J. L. Aymard and Lieutenant G. C. Birt assisting, in which ether-oil was given by the rectal method (Lieutenant R. Wade), the flap stretched from ear to ear to the other across the vertex and was about 3 inches in width. (See Figs. 4 and 5, Case 1). Before bringing this into position



CASE 2.—(1 and 2) Condition on admission. (3) Adjustable intranasal support carried from a metal cap splint cemented to the upper teeth. (4) Improvement obtained by operation and insertion of nasal splint. (5 and 6) Result of insertion of cartilage graft from rib. Taken three months after operation.

the skin below the buccal opening was raised by incision and dissection and laid on the upper surface of a large osteo-cartilaginous graft from the seventh rib. This measured some 6 inches along its long convex border and was the shape of a boomerang; it included about 1 inch of the bony portion of the rib and was fixed by iron wire into the remains of the jaw, bone to bone on the left side and cartilage to bone on the right, being fixed so that the point of maximum convexity of the cartilage became the prominence of the chin. The large scalp flap was then swung over the face into position so that it covered the upper, lower, and lateral aspects of the new "jaw," and sutured to the surrounding skin edges. The pedicles were cut on the eleventh day and returned to the scalp (Fig. 6, Case 1); the new blood-supply of the grafted portion being satisfactory, there was no question of gangrene.

Many causes operated against asepsis, of which the more obvious were: (1) the length of operation; (2) the difficulty of sealing off the junction of the pedicle and the embedded portion; and (3) the very strong growth of hair on the flap. Discharge appeared at the lower border of the flap on the fifth day, and has continued.

I must own that in planning this operation it was not expected that a good functional result would accrue, but some degree of mastication is yet possible where there was none, and the gain to the patient of having a chin and a full beard is almost certainly permanent. The secondary disability is a bare area on the top of the scalp, which is being epithelialised.

In criticising this procedure I feel it would be better to either insert a piece of metal or celluloid at the time the scalp flap is brought down, to be replaced later by an osteo-cartilaginous graft under more aseptic conditions, or else to embed the graft in two halves in the scalp some six weeks before it is swung down. In this event the graft, at a later stage, could be joined in the middle and to the remains of the jaw.

There still remains the freeing of the lip to be done, which is best achieved by an epithelial inlay as advocated by Esser. The present condition of the case is as shown in Fig. 6 (Case 1), and although there is a discharge it is diminishing, and, in view of past experience, it is reasonable to expect the process to cease and the appearance to be maintained. Later note: Discharge almost ceased.

CASE 2. *Restoration of the nose by dental splint and cartilage graft.*—Wounded on 20/12/16. The condition on admission, nine days later, to the Cambridge Hospital, Aldershot, is shown in Figs. 1 and 2 (Case 2); the anterior part of the septum, with portions of both alæ, having been shot away, a considerable flattening of the nose resulted.

First operation, 15/1/17: The flattened portions having been freed of all their adhesions under chloroform, I inserted the apparatus shown in Fig. 3 (Case 2) (drawn by Professor H. Tonks), made by Captain L. A. B. King and staff. This was continuously worn by the patient for seven weeks and produced a very considerable improvement, as shown in Fig. 4 (Case 2). Figs. 5 and 6 (Case 2) show the later and permanent result of the insertion of a cartilage graft 3 inches in length, taken from the eighth rib, to raise and support the lower part of the nose. The cartilage was inserted in two portions through the columella; the longer portion was pushed in beneath the skin to form the bridge, while a shorter piece was embedded down the columella towards the maxilla so as to support the tip of the nose. Plastic re-suture of the alæ to give symmetrical appearance was carried out at the same operation.

To Captain Kelsey Fry belongs the credit of giving the nasal splint a prolonged trial.

THE LIGHTING OF MOTOR CYCLES.—With the prohibition of the sale of calcium carbide acetylene lamps are out of the question, whilst electric lighting outfits cannot be readily purchased and oil lamps are not ideal for use on a motor cycle. The Auto-Cycle Union will investigate and report upon applications from medical practitioners for calcium carbide, with the approval of the Ministry of Munitions. Permits will be issued under Para. 4 of the Order of Sept. 24th, 1917, and applications will receive consideration within the limits of the supply of carbide available. Medical men should apply to the Secretary, Auto-Cycle Union, 83, Pall Mall, S.W.1, for forms on which to apply for permits.

A FEW NOTES

ON THE TREATMENT OF GUNSHOT WOUNDS OF THE MANDIBLE AND MAXILLA.

BY W. KELSEY FRY, M.C., M.R.C.S., L.D.S.

TEMPORARY CAPTAIN, R.A.M.C.; OFFICER IN CHARGE, DENTAL DEPARTMENT, QUEEN'S HOSPITAL, SIDCUP.

(*From the Dental Department, Queen's Hospital, Frognal, Sidcup.*)

THE work of this department is very varied, but it may be taken roughly that 75 per cent. of the patients admitted have fractured mandibles with or without fracture of the maxilla, a further 10 per cent. have fractures of the maxilla that require dental treatment, and the remaining 15 per cent. are purely plastic cases.

Fracture of the Mandible.

The routine treatment of this injury will now be described. As soon as possible the patient is sent to the radiographic department in order that skiagrams may be taken to demonstrate the situation and extent of the injury to the bone. For this purpose an antero-posterior in addition to a right or left special view is always taken.

In obtaining the antero-posterior view the patient's face is, of course, always next to the photographic plate. A careful examination of such a skiagram will determine any lack of symmetry with regard to the mandible, and will show a break in the continuity of the bone should it be present; the amount of displacement can also be detected with ease. If a fracture of the coronoid process or neck of condyle is suspected it is best to take the skiagram with the mouth open.

When a fracture is present in the regions of the horizontal and ascending rami a lateral view is always necessary, as the rays must be directed as far as possible at right angles to their lateral surface, and in order to obtain precise information care must be taken to avoid in the picture overlapping of the two lateral halves.

It is very important to repeat these lateral views at intervals of a month or six weeks in exactly the same position, so that any change in the position of the fragments can be detected and estimate of the progress determined.

The following points to be noted in the skiagrams thus obtained are: (1) The teeth involved in the fractured area and those likely to be involved at a later period; (2) the amount of bone lost; (3) type of displacement; (4) the presence of foreign bodies, which include not only metal fragments, but displaced teeth.

Having obtained in this way information regarding the relationship of the fracture to the teeth, the question of their extraction is now considered. When the wound is very septic, as is generally the case, free extraction is the rule—that is to say, any tooth which is in the line of fracture or likely to become involved by absorption of the surrounding bone is removed. Lines of fracture are open pathways for the spreading of an infective process, and should they be in proximity to the periodontal membrane a secondary inflammatory condition of the latter is bound to follow in the very area in which it is hoped new bone will be formed. More conservative treatment can be adopted in circumstances where the wound is not likely to be much infected—such as fractures occurring in civil practice, where violence is less extreme when the blow has been inflicted by comparatively blunt objects. Such cases are sometimes met in military practice—horse kick, injuries from dug-out falling in, &c.

Sometimes, however, a tooth is retained on the posterior fragment of the mandible which at first examination would require to be removed, but it must be remembered that it is extremely important to have a molar tooth left for splinting purposes, and the benefit to be gained by retaining it, even for a time, outweighs the septic risks of keeping it. Skiagrams are taken at intervals while patient is under treatment, and the condition of the area around the tooth and the progress of repair are carefully observed.

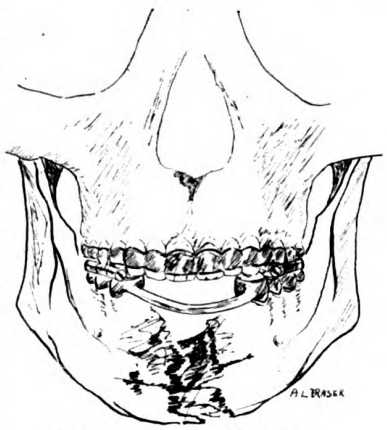
At the time of extraction of the teeth drainage is always established. A piece of rubber tubing is placed between the ends of the bone and brought into the submaxillary or submental region of the neck. Should the position of the

wound in the soft parts not be suitable for this purpose a fresh counter-opening is made. This procedure is especially useful for middle-line fractures.

The drainage-tubes are left in from 14 to 21 days, being gradually withdrawn after about seven days.

No bone is removed at time of operation, except that which is very loose and obviously necrotic, in the hope that some osteogenetic cells may be still alive and later on contribute to the formation of callus. This is specially noticeable in the symphysis region, where quite small loose pieces of bone form a large amount of callus provided the drainage is adequate.

FIG. 1.



Splints. Front aspect in position.

FIG. 1A.



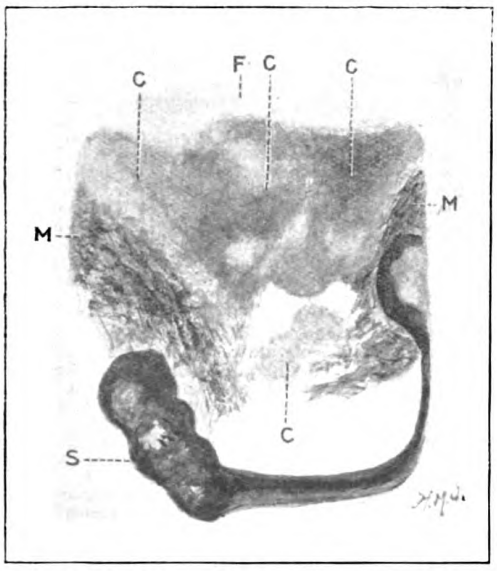
Splints shown in detail. (Reduced to half size.)

Impressions of the teeth are now taken for making the splints. This is often a very difficult undertaking, but small shallow trays with the use of plaster-of-Paris will often give satisfaction. I have recently taken my impressions after the patient has had the teeth extracted, and while he is still under the influence of the anæsthetic. In the latter case it is best to use dental composition, as it hardens very quickly.

While the splints are being made the broken fragments of the mandible are put at rest by ligaturing the teeth to the maxilla with grass line and brass ligature wire. The former, which was brought to my notice by Lieutenant H. C. Malleson, R.A.M.C., has proved very useful for this purpose. The one disadvantage is that it is difficult sometimes to pass it between the necessary teeth.

I have overcome this by using a surgeon's curved plastic needle, which can be easily introduced between the necks of the required teeth without injuring the marginal tissues.

FIG. 2.



Drawing of skiagram of middle fracture of mandible three months after injury. C, callus; F, floor of mouth; M, mandible; S, splint.

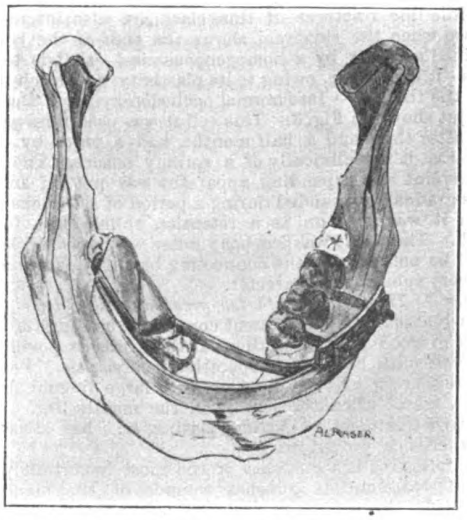
At this stage a case is classified into one of three classes: (1) Those cases which should get primary bony union in normal occlusion; (2) those cases in which primary bony union is doubtful; (3) those cases in which it is certain that no functional useful primary union can be got owing to too great a loss of bone.

Class 1. Cases in which primary bony union in normal occlusion is expected.—These cases are splinted into normal occlusion. Upper and lower capped cast splints are most generally used. It is very seldom that a lower splint alone is used even for simple middle line fractures as the front teeth generally have to be extracted. In these cases the fulcrum of the splint is found to be too far back, and in spite of a firm connecting bar, slight movement is present which has been known to account for the non-union of these fractures.

The most common type of splint which is used is shown in Fig. 1. These are retained from two to five months, varying with the progress of the case. The splints are so constructed that it is possible to open the mouth at any time to remove sequestra, &c.

There is one type of fracture which often presents considerable difficulty—i.e., fractures of the symphysis with a

FIG. 3.



fair amount of comminution. It is found on removing a splint after a period of about three months a condition of the fragments exists which on casual examination would lead one to suspect that complete bony union had taken place. On careful examination, however, a slight springiness will sometimes be detected. If this is the case, in my experience it is not likely that the complete consolidation will take place if the splint is removed. This union is really only callus, which is known to be of a plastic nature, and the patient will bite the two lateral fragments inwards in a very short time. This type of case is very difficult to radiograph. The best results have been obtained by Lieutenant H. M. Johnston, R.A.M.C., by the use of small plates of aluminium cassettes placed inside the mouth. The skiagrams thus obtained require very careful reading.

Fig. 2 shows the mass of tissue joining the two ends of the bone is of a homogeneous appearance—that is to say, it consists of callus only. Repeated skiagrams of these cases should be taken until definite bony spicules can be seen running through the homogeneous mass.

Class 2. Fracture of mandible with a fairly large loss of bone; prospect of obtaining primary bony union doubtful.—In these cases the patient must be given every chance of getting primary bony union, and in fractures of the angle the anterior fragment must be swung over to help fill up the gap. Nature also helps by swinging forward the posterior fragment. In middle-line fractures the two sides must be approximated. In these positions the jaws must be splinted for a varying period and repeated skiagrams taken. If large pieces of necrosed bone have exfoliated and no chance of union is observed, the case is then treated as in Class 3. If the case is seen to be progressing favourably the splints are left until some bony union has taken place, by which time, by extracting one or two upper teeth on the affected side, the jaw can be swung back into its normal position. On the other hand, if the jaw has been swung over too far and cannot be swung back the bone is in a better condition for a bone-graft, because the freshly cut ends are preferable to the sclerosed ends of the ununited fragments.

FIG. 4.



Kingsley's splint in position.

Surgically, however, a difficulty may arise in this latter procedure, the mucous membrane of the mouth possibly being perforated whilst stretching the two parts. In such a case the fragments must be separated and brought as far as possible into normal occlusion and the bone-graft operation postponed to a later date.

Middle-line fractures of this class are also interesting, because when the skiagram shows the ends of the bone to be joined together by a homogeneous mass—that is to say, callus—it is possible, owing to its plasticity, to stretch it and bring the fragments into normal occlusion by using the type of splint shown in Fig. 3. This splint was used for a patient who, after three and a half months, had a union by callus only—i.e., it was clinically of a springy nature. The combined splint and expanding apparatus was put on and the callus gradually expanded during a period of six weeks, after which it was kept on as a retention splint for a further month. The result was firm bony union with good occlusion. It will be noticed that the connecting bar of this splint was of a very substantial character.

Class 3. Those cases with too great a loss of bone to get primary union.—The treatment consists in holding the fragments in good position with as little strain as possible on the teeth until bone graft operation is advisable. For this purpose a lower cast tin denture with large lingual flanges is very useful when the loss is in the middle line. Early operative treatment by wiring, plating, &c., has always, in my experience, proved useless.

The following is a summary of the most important points in the treatment of gunshot wounds of the mandible: (1) Getting the patient early; (2) freeing the mouth of all septic teeth and teeth involved or likely to be in the fractured area; (3) establishing good downward drainage as early as possible; (4) not removing any loose bone unless obviously necrotic; (5) reduce displacement as soon as possible, especially the open bite; (6) absolute immobility of the fractured ends for a long period; (7) thorough exposure and removal of sequestra; (8) when the union is thought to be delayed interference by surgical means should be considered; and (9) stimulating the growth of callus by massage and high-frequency treatment.

Fracture of the Maxilla.

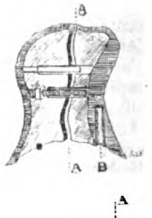
There is only one class of these cases and they are treated with success in the following way: (1) Free extraction of septic teeth and teeth involved in fractured area; (2) early suturing of soft parts when possible; (3) good drainage; (4) leaving all loose bone to exfoliate itself; (5) supporting the maxilla with a vulcanite "Kingsley" splint which has been perforated to assist drainage. The splint is held up by elastics to a head net or plaster-of-Paris bandage around the head. (Fig. 4.) In a very badly fractured maxilla in high position care has to be taken not to press upwards too much in case the optic nerve is pressed upon.

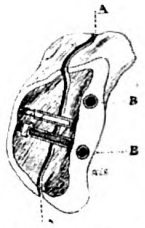
In treating old gunshot wounds of the maxilla numerous difficulties present themselves and various appliances differing in every case with the degree of loss are used. The following is an example:—

The patient was wounded 18/8/16, and was admitted into this hospital 10/3/17. On examination it was found that he had got an old gunshot wound in the face with large loss of the maxilla and nasal structure, and loss of both eyes. The hard palate was entirely lost except for a small part which included the two posterior tuberosities with the intervening part of the palate. Both antra were widely opened owing to the absence of the nasal and anterior walls. The soft tissues of the lip and nose were adherent to the small remaining part of the palate as shown in Fig. 5.

The case was seen by Major H. D. Gillies, R.A.M.C., who decided to free the soft tissues from the small remaining part of the palate. Major Gillies operated; preliminary laryngotomy and anæsthetic given through laryngotomy tube. A knife was inserted behind the upper lip, and the line of attachment of the soft parts both to the hard palate and laterally to the remains of the superior maxilla was divided in a vertical direction until the level of the eye-sockets was reached. The soft tissues were then stretched forward.

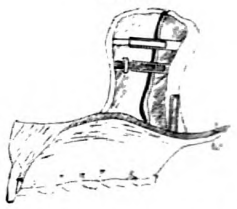
FIG. 6.





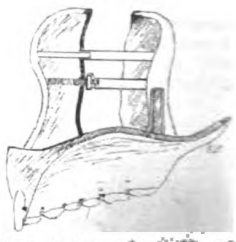
Mould. A—A, line of division of mould. B—B, sockets for split pins on denture. (Reduced to half size.)

FIG. 7.



Mould with denture in position before expansion.

FIG. 8.



New position of mould and denture after expansion.

At this stage the case was taken over by the dental department for the soft parts to be kept in the new position. While still under the anæsthetic dental composition was forced up into the gap made and left to harden. When hardened it was removed and the impression used for making the necessary permanent apparatus. In the meantime another piece of composition was inserted into the gap and left in position to hold the soft parts out while the apparatus was being made.

The type of apparatus made is shown in Figs. 6, 7, 8.

A hollowed-out piece of vulcanite was made to fill the gap. This had a nut and bolt arrangement which enabled the front part to be pushed forward when required after the mould had been divided along the line (A—A, Fig. 6).

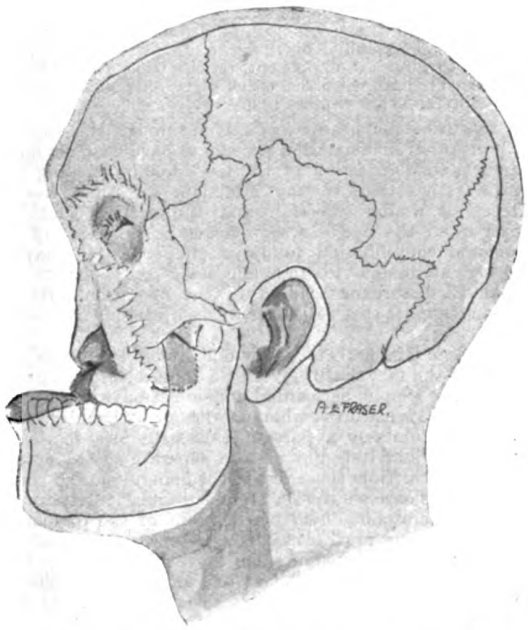
A denture was then attached to this mould by two split pins which fitted into the posterior part of the mould, which had been specially thickened for this purpose (B—B, Fig. 6).

During a period of two or three weeks the upper part of the apparatus was gradually brought forward to the position shown in Fig. 8, which gave the patient the best cosmetic effect.

In order to maintain this position permanently and at the same time to prevent the soft tissues encroaching into the gap the interval was filled up with vulcanite, a procedure which occupied about four hours.

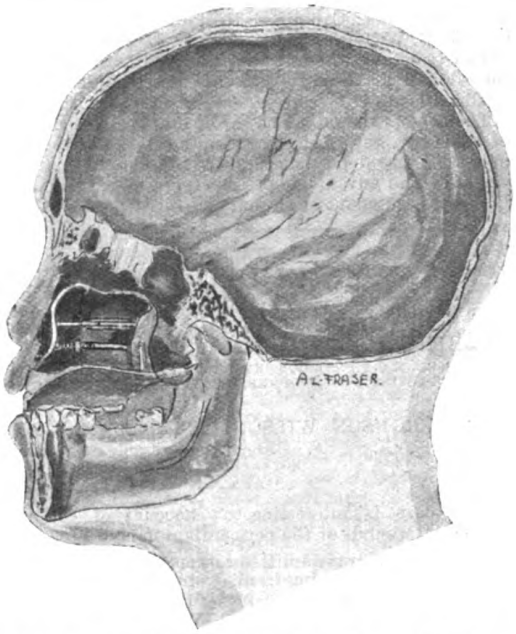
When we attempted to replace the mould we were surprised to find that this was impossible. The scar tissue had contracted so much during the short time that it was necessary to administer nitrous oxide gas and forcibly stretch the soft parts (the apparatus had previously been

FIG. 5.



Shows the portion of maxilla lost and the soft tissues adhere .t.

FIG. 9.



Mould and denture *in situ* after gap has been filled with vulcanite.

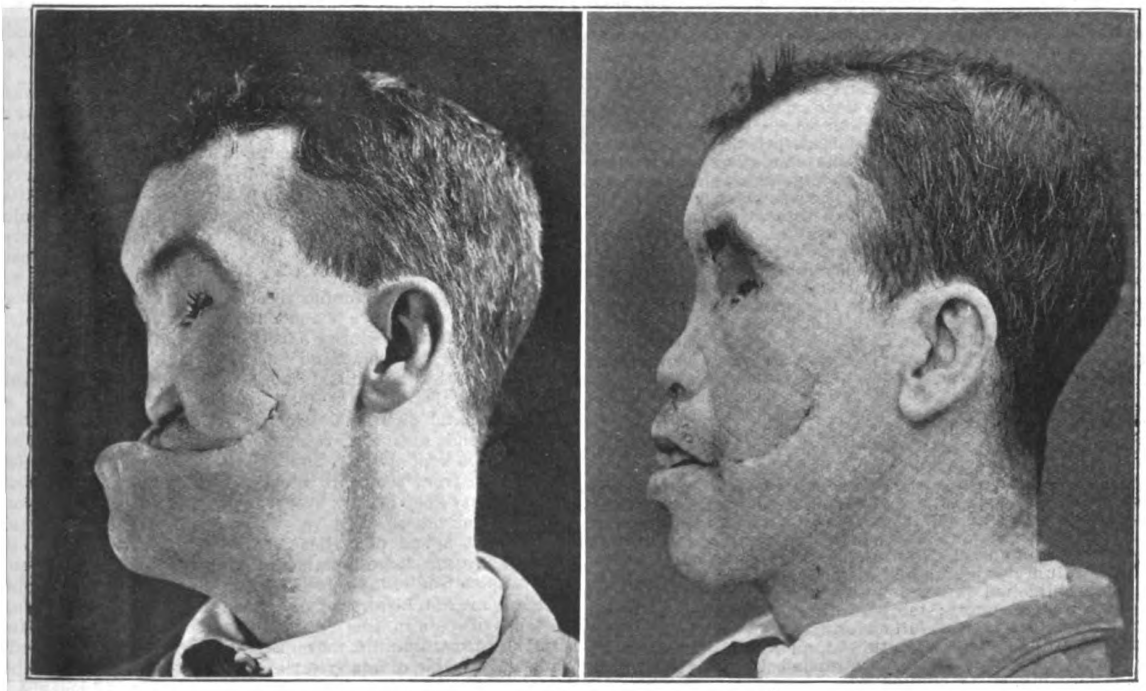
removed twice daily by the patient himself for the purpose of cleaning, and no difficulty had been experienced). The denture was now remade to fit the mould accurately in its new and permanent position. (Fig. 9.) The patient now is able to eat a fair diet and the cosmetic effect is greatly improved. Figs. 10 A and 10 B show the patient before and after operation and dental treatment.

The diagrams accompanying this article have been drawn by Captain A. L. Fraser, dental surgeon. In addition, I should like to acknowledge the great help both in general principles and in mechanical details that I have received from one and all of the staff.

When a group of keen dental men are working for the same end—the benefit of the patient—it is obvious that the work on any one case is the product of ideas of the whole staff. The mechanical work carried out by one dental surgeon in any particular case is the outcome of the general experience of the department both in this present home and as it

FIG. 10 A.

FIG. 10 B.



Before treatment.

After operation and dental treatment.

used to be at the Cambridge Hospital, Aldershot. In this connexion I should like to mention the early work done by Captain L. B. King whilst at Aldershot, and especially the present workers: Captain E. G. Robertson, Captain A. Jupp, Captain E. W. Lowe, and Captain A. L. Fraser.

The general control of the fractured jaw cases, both in their dental and their plastic stages, is under the doubly-qualified medical officers who are in charge of the cases.

The combined dental and medical knowledge of this type of officer is rightly held by the authorities to be indispensable to a jaw department, and at present, in this capacity, we have the advantage of the services of Captain C. F. Rumsey, Lieutenant Malleson, and Lieutenant G. C. Birt.

A CASE OF TRAUMATIC PERICARDITIS DUE TO A NEEDLE.

BY ARTHUR J. HALL, M.A., M.D.CAMB., F.R.C.P.LOND.,
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AND
J. B. FERGUSON WILSON, M.S. LOND., F.R.C.S. ENG.,
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THIS case is interesting on account of the rarity of accidental wounds of the pericardium in civil life.

A girl aged 12 was admitted to the Sheffield Royal Hospital on August 21st suffering from dyspnœa. Her history was as follows. On the 16th she picked up an old rusty sewing needle which she found in the street and pinned it in the front of her blouse. When she got home she vomited twice and felt poorly. She also had some pain in her chest, and her mother found a mark on the chest, together with the broken end of the needle sticking in the blouse. The child thinks that the needle must have run into her chest whilst she was leaning against a wall, but she did not feel any pain at the time and was quite unaware of what had happened. As her symptoms did not improve she was brought to hospital five days later.

When seen the same evening the child was lying propped up in bed. The respiration was frequent and shallow, alæ nasi dilating; slight pyrexia. She did not complain of pain anywhere, and, in fact, the absence of subjective distress was a striking feature throughout. On examining the chest the cardiac dullness was found much enlarged; it extended for 1½ inches to the right of the sternum and as far as the anterior axillary line to the left; upwards to the first intercostal space. The impulse could not be felt; the heart sounds were very faint. There was a loud double pericardial friction over the sternum and to the left. The point of entry of the needle was visible as a small punctate scar situated at the left edge of the sternum, where it is joined by the lower border of the fourth left costal cartilage. It seemed quite healthy; there was no pus. A radiogram taken from the front showed the portion of needle lying almost in the middle line, a little to the left, at a level corresponding to the site of entry. As seen in this plane it was about ¾ inch long. The plate also showed a large heart shadow, due to the pericardial effusion. The pulse was 120–130.

As the child did not seem in any immediate danger it was agreed not to attempt the removal of the needle until a further radiogram had been taken giving a side view, and then to proceed according to what it showed. On the next day the lateral radiogram showed the needle pointing almost horizontally backwards. It was about ¾ inch long, one half of it being in or alongside the sternum, the remainder projecting into the thorax. The physical signs were the same as on the previous day, and operation was decided upon. As the surface wound seemed to be slightly to the left of the sternum, it was thought that the needle had probably gone through the fourth left space. An incision was therefore made at this level, but no trace of the needle or its track was found. The cartilage of the fifth left rib was then cut through and turned outwards, but still without result. On passing the finger mesially behind the sternum the point of the needle was felt projecting backwards, and by means of a blunt instrument was easily pushed forwards out of the front of the sternum through its channel of entry. The wound was then closed. Neither pericardium nor pleura had been opened.

The child had rather a restless night, with a good deal of cough and dyspnœa; temperature slightly raised. It was not possible to make a full examination of the left chest on the following day owing to the wound and dressings, but the dullness to the right of the sternum had obviously diminished considerably. The friction sounds were also less audible. There was, however, a large extension of dullness up to the left clavicle, and bronchial breathing over the left upper front. On the 24th the child was much better, the cardiac dullness was smaller, the friction sounds were rather more to the left, and the area of lung dullness and bronchial breathing had extended downwards. After this she made rapid improvement, and on Sept. 1st the friction sounds had disappeared; there were also signs of resolution in the left lung. She made a complete recovery.

In this case the needle was driven through the sternum and pericardial inflammation appears to have been set up by the mechanical irritation of the needle-point sticking into the sac rather than to any infection, for there was no evidence of wound infection and the effusion subsided quickly when the needle was removed. The cause of the pneumonic consolidation following the operation may be variously attributed to the effect of ether or to the mechanical disturbance caused by the operation. Its site of origin suggests that the latter was at least a contributing cause.

Remarks by Major HALL.—The chief interest in this case consists in the fact that it gives us a picture of the clinical effects of a simple pericardial inflammation without anything else. Pericarditis, whether with or without effusion, is, as a rule, merely a part of some general infection or fatal disease, and it is not easy to separate the symptoms due to the local from those due to the general morbid condition. In this case we have a simple traumatic irritant, the mechanical scratching by a needle-point of the pericardial walls, and if any organisms were present and played any part in producing inflammation they were, at any rate, introduced directly from without and not from the general blood-stream or from neighbouring diseased areas. It is, in fact, more like a simple laboratory experiment than a pericarditis of disease such as we are accustomed to meet with in clinical work. The general impression which it gives is that such a simple pericardial inflammation is a much less serious and formidable condition than one would be led by previous experience to expect.

The cardinal symptoms of a pericarditis are (1) pain, usually over or near the præcordium, sometimes very severe; (2) dyspnœa, and other symptoms of cardiac embarrassment; and (3) nervous complications, restlessness, insomnia, vomiting, and, at times, delirium, varying in degree, and at times associated with convulsions or ending in coma. In some cases it has been noted that some or even all of these symptoms are slight or even absent, and various reasons have been given to explain this anomaly. If one may judge by the case here recorded it seems rather that mildness or absence of severe symptoms is the natural history of a pericardial inflammation alone, and that the severe symptoms often observed are due not to the pericarditis but to other associated troubles.

In this case pain over the præcordium or elsewhere was absent throughout. There was certainly none during the child's stay in hospital, and, according to her own repeated statement, there was none previously. Cases without pain have been often recorded, and one knows that this is particularly so in young children; also that in cases of pericarditis occurring as a terminal or pre-terminal event in chronic disease the actual existence of this complication has only been discovered at autopsy. This absence of pain is rather surprising when one thinks of the intensity of pain so commonly present in similar affections of the neighbouring pleura. Possibly there is a mechanical explanation of this. Even the pain of pleurisy varies considerably, according to the part of the membrane affected, and it is a common experience that an apical pneumonia, with its attendant pleurisy, is less painful than one at the base, whilst a diaphragmatic pleurisy is exceedingly painful. This difference depends upon the extent to which the acutely inflamed area can be kept at rest, and this is greater the further the trouble is from the more mobile lower parts of the chest, where every deep breath, every cough, and every contraction of the trunk muscles involves movement of the affected parts. That most apical pleurisies must be painless or nearly so is shown by the large number of cadavers in which extensive apical adhesions are found, and yet there is no record in the history of the case of any corresponding attacks of pain in this region having occurred during life. In the pericardium the movements of the heart are limited and not capable of much variation in extent, so long as the patient is at rest, nor do respiratory movements of the chest

wall alter the position of the sac to any great extent. Thus, on the whole, the factor which brings about pain in a pleurisy—namely, increased movement—occurs less in pericarditis. It may therefore be assumed that in a simple pericardial inflammation, due to mechanical causes, and with no complications, pain is not an essential characteristic.

The second cardinal symptom, described in the text-books, is dyspnœa with cardiac embarrassment. This is usually explained on mechanical grounds, and seems natural and reasonable. As the fluid increases in amount the pressure on the heart increases, and the compression of the great afferent vessels at the back and lower part of the sac must also become greater. But it has been noted that in some cases the sac can contain extremely large quantities of fluid without very much inconvenience. This has been explained by saying that the amount which the sac can contain without causing distress depends on the rate at which the fluid accumulates; if it is a slow and gradual process the sac has time to become distended, while if it is formed quickly the distress is urgent. Everything depends upon how the terms "slow" and "quick" in this sense are interpreted. What is a quick formation of fluid in a pericarditis? Pathologists state that the first or hyperæmic stage lasts from 24 to 48 hours, and an effusion that reaches any size in three or four days after that is probably as quickly formed as ever occurs. In this patient the exact time of onset of trauma was August 16th, and on the 21st, the sixth day of the illness, the physical signs showed an extensive effusion, which was confirmed by the radiogram shadow. In spite of this rapidly formed large effusion, the effect on the heart was extremely slight. There was no cyanosis, no real orthopnœa, nothing but a slight increase in the rate of breathing, with some dilatation of the alæ nasi. How far, and in what manner, a pericardial effusion under ordinary circumstances does mechanically impede the heart beat is a point upon which varying views have from time to time been expressed. Such action as it may have must be chiefly upon the thin walls of the auricles and their supply vessels, and must take the form of preventing expansion. If at any single heart beat the organ can attain a certain size, it does not seem possible for any outside squeeze to stop it from emptying itself, and if mechanical factors play any important part in creating cardiac difficulty it must be in gradually squeezing the chambers which feed the ventricles. The often-recorded anomaly that a very large effusion may cause but little obvious discomfort and the complete absence of any cardiac disturbance in this case make one wonder whether the mechanical factor of the effusion in many cases of great distress has not been exaggerated, and that the distress is really due as much, if not even more, to other effects on the heart muscle of the poison which is causing the disease.

When one considers the nervous symptoms attributed to a pericardial inflammation it is evident from their complete absence in this case that they also are no necessary adjunct of a simple acute pericarditis, but are rather due to the general toxæmia, and indicate, as does the invasion of the pericardium, a severe infection. This child seemed in no way embarrassed by the chest symptoms, the nervous system being entirely normal, so that it was difficult to look upon her as having an acute pericardial effusion at all. So much was this so that it was thought she must be one of those placid happy persons who are disturbed neither by pain nor fear. That this was not so, and that when pain or discomfort was really present she showed it in the usual way was made clear some days after the operation, when a small stitch abscess required slight attention and she made a great fuss about it. It has been said that dry pericarditis does not kill, though it frequently occurs in dying patients; is it not also possible that pericarditis has acquired its bad name largely from keeping bad company?

Sheffield.

ROYAL INSTITUTION.—At a general meeting of the members of the Royal Institution, Sir James Crichton-Browne, treasurer, announced that Dr. Arthur Keith had been appointed Fullerian professor of physiology.

THE Lord Chancellor has appointed Mr. M. J. Nolan, resident medical superintendent, Down District Asylum, as consulting Visitor in Lunacy in the place of the late Lieutenant-Colonel Graham.

DIAPHRAGMATIC HERNIA:

WITH REPORT OF A CASE OF THE ACQUIRED CONDITION.

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AND
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DIAPHRAGMATIC hernia is stated to be the most common form of the internal hernia, yet it was found only three times in 13 years at the London Hospital in 699 cases of intestinal obstruction.[1] According to Scudder, a thousand cases of diaphragmatic hernia have been reported,[2] but only a comparatively small number during life. In 650 cases reviewed by Giffin, of the Mayo Clinic,[3] only 15 were reported during life. Probably a larger proportion are discovered during life now that radiographic and fluoroscopic examinations are so frequently made in abdominal conditions.

We have seen only one case reported as a war casualty,[4] although the frequency with which men in the vicinity of bursting shells are buried under a mass of earth and débris makes the accident highly probable, and should be thought of in obscure abdominal or chest conditions.

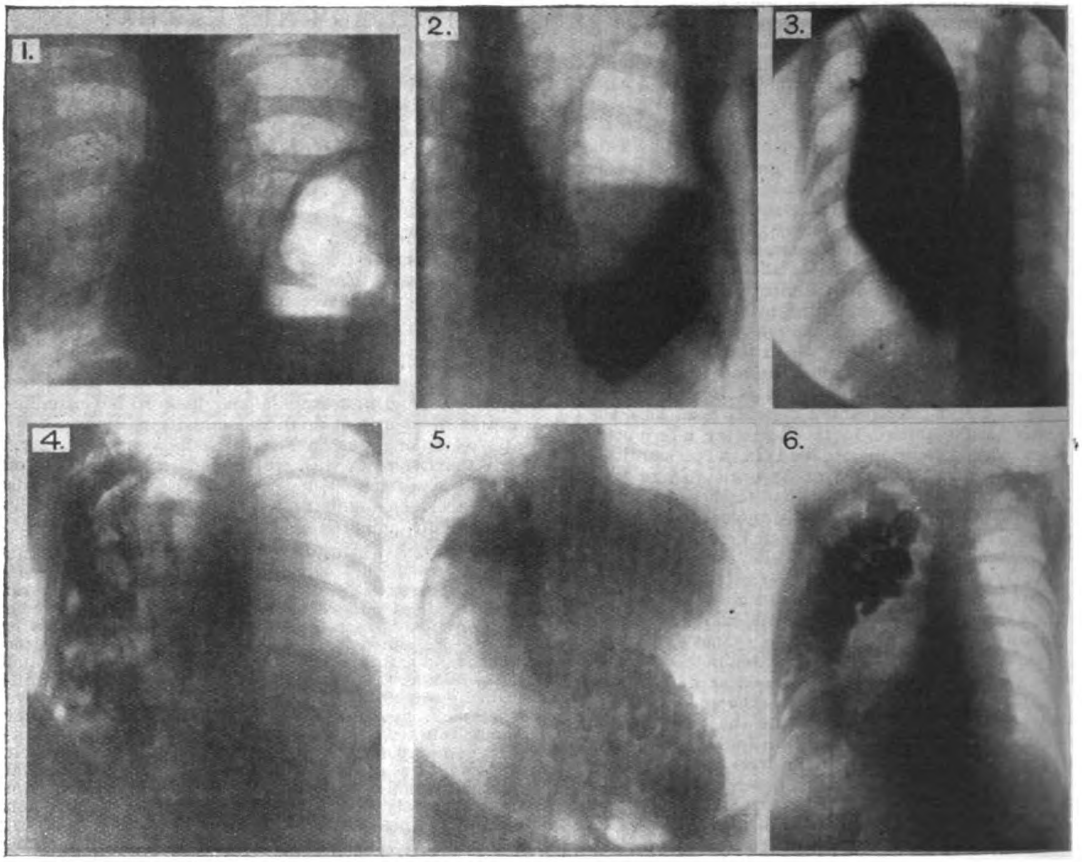
The patient, Private S. M., age 34, born in England, was admitted on April 3rd, 1917. He has been living in Canada for nearly 12 years, where he worked as an oiler in an electric light plant. He says he was always in good health before he joined the Army. His weight on enlisting was 155 lb.; it is now 122 lb. He joined the C.E.F. on May 19th, 1915, and for five months did training in Canada. He came to England Oct. 20th, 1915, and underwent another eight months' training. During the whole of these 13 months he did not have to report sick, never missed a parade, nor did he ever "drop-out" on a route march. He frequently played football, and remembers that his heart beats were always felt on the left side of the chest. He went to France on Sept. 1st, 1916, and was quite well till Oct. 24th, 1916, when he was completely buried by the caving in of a trench following the explosion of a shell. He was dug out almost immediately, but was quite unable to stand up as his back "felt as though it had been broken," and he had a severe pain which was referred to the region of the eighth and ninth dorsal vertebræ. He was then carried on a stretcher to the Courcelette dressing station, where he was given a hypodermic of morphia and sent to a casualty clearing station and then to No. —— General Hospital, Rouen; here he remained for over a month. During his stay in Rouen he was examined with the X rays (screened), but no bismuth meals given. It was evidently concluded that he had a hæmothorax (cf. Fig. 1), as his left chest was aspirated twice. On the first occasion some bloody fluid was obtained, but nothing was found on the second. He was then evacuated to England and on April 3rd, 1917, to the special clinic.

Physical examination.—A sparely-built man, colour good, but of delicate appearance, with very flabby muscles. He is able to walk five miles without distress, but any sudden exertion causes marked dyspnœa. He has no symptoms while remaining quiet.

Chest.—Left shoulder habitually carried higher than the right. Compensatory curve of the spine to the left. On straightening his shoulders the spinal curvature disappears. *Chest measurement.*—Expiration 32 inches. Inspiration 33¾ inches. Right side, at the nipple level, 16¼ inches; left side, 16⅛ inches. On inspiration the excursion of the right chest is slightly greater than the left. Tactile and vocal fremitus is much diminished on the left, below the fourth rib in front, and the angle of the scapula behind. Percussion in front, right side, resonant. Left side, resonance, to the third rib in front and midscapular region behind. Below these points a dull tympany (the type of tympany differed with various examinations).

Auscultation.—Over the right chest nothing abnormal to be heard. Left chest, breath sounds were to be heard to some extent over the whole left side, diminished, below the third rib in front, and midscapular region behind. Over this area a metallic tinkling could be heard. (This was the sign which first led us to suspect the presence of the stomach in the left chest.) Coin test present, and made out best at different points of the left chest on different examinations. On some occasions it could not be demonstrated.

Heart.—Apex beat in the fifth right interspace, 2½ inches from the right border of the sternum. A diastolic murmur was noticed at the second right costal cartilage and down the right border of the sternum. The intensity of this murmur varied with position, being more evident with standing up than on lying down. It also varied on different days, and on



1.—Patient standing. Plate anterior. Shows stomach well up into left side of thorax. Heart displaced to right. Level of diaphragm on right side is clearly shown. Free fluid level in stomach is that of ordinary meal taken a few hours before X ray examination.

2.—Patient standing. Plate anterior. Obtained a few minutes after bismuth meal had been given. Shows level of diaphragm, right side. stomach well up into left thorax; bismuth meal in lower part of the picture—i.e., in the cardiac portion of the stomach (the meal was seen to enter at this end); and the less dense shadow of ordinary meal lying above the test meal.

3.—Patient lying down. Plate posterior. The bismuth has spread out, showing the upper level of the stomach to be in region of second rib. The × indicates position of left nipple. Along the outer edge of the picture may be seen a light shadow, caused by gas-filled gut.

4.—Patient lying down. Plate posterior. Obtained some four hours p.c. At about the middle point of the picture a shadow may be seen, caused by bismuth which still remains in the portion of the stomach which passes through the opening in the diaphragm. The level of the latter is distinctly seen on the right side. A large part of the left thorax is seen to be occupied by intestines.

5.—Patient lying down. Plate posterior. Obtained about 13 hours p.c. The level of the diaphragm can be seen. The bismuth in the transverse colon is just passing through opening in the diaphragm.

6.—Patient lying down. Plate posterior. Bismuth enema. Showing large intestine in the left thoracic cavity.

some examinations was absent. Blood pressure: Systolic, 124 mm.; diastolic, 90 mm.

The spleen could not be percussed in its ordinary position.

The patient was examined by Colonel F. G. Finley, C.A.M.C., and one of us, and diaphragmatic hernia suspected. He was then given a bismuth meal and X rayed at the Canadian Hospital, Taplow, and the diagnosis of diaphragmatic hernia confirmed. Later he was sent to Ramsgate for further examination. The radiograms illustrating this report were obtained during his stay at the Granville Hospital.

A hernia may occur through the diaphragm either on its right or left side. When on the right side it usually consists of a knob of liver tissue, On the left side the contents are nearly always stomach; and then, in order of frequency, the transverse colon, the omentum, the small intestine, the spleen, the left lobe of the liver, the pancreas, and the left kidney. In addition, lung tissue may make its way downward through a deficiency in the diaphragm.[6]

Diaphragmatic herniæ are either congenital or acquired. Grasser and Thoma collected 433 cases, of which 232 were congenital and 181 acquired. Many of the congenital cases have been in stillborn babies; those who live usually go through life without symptoms, or until the onset of intestinal obstruction, when the diagnosis of the condition is made at operation or on the post-mortem table. The acquired cases are due to some trauma, such as a stab or gunshot wound,[5] or to indirect violence, causing an increase in the intra-abdominal pressure with resulting rupture of the diaphragm. The symptoms complained of in almost all of the reported cases have been dyspnœa, pain, or some indefinite gastric complaint, in some cases resembling gall-stones or ulcer of the stomach.

In the diagnosis of diaphragmatic hernia the most important evidence is to be found in: 1. Displacement of the heart to the right. This was evident to some degree in all of the cases reviewed. 2. Metallic tinkling heard high up in the chest, having relation to the peristaltic movements of the stomach, and not especially corresponding in time to the respiratory movements. 3. Tympany of some degree high up in the left chest. 4. Absence over the left chest of the dull note indicating fluid, or of the hyper-resonant note of pneumothorax.

References.—1. Contributions to Abdominal Surgery, Barnard. 2. Diaphragmatic Hernia, G. Brown Miller, American Journal of Obstetrics, 1916. 3. Annals of Surgery, 1912. 4. Diaphragmatic Hernia following a Bullet Wound, Major D'Oyle Grange, R.A.M.C., British Journal of Surgery, April, 1917. 5. Hernie Diaphragmatique Congenitale Perforation par Eclat d'Obus de l'Estomac hernié dans la Cavité Thoracique Gauche, Presse Médicale, 27 Mars, 1917. 6. Prolapse of Lung through a Deficiency in the Anterior Portion of the Diaphragm. J. N. Kilner, THE LANCET, 1915, ii., 1247.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Discussion on Surgical and Dental Treatment of Severe Facial Injuries.

A MEETING of this society was held on Dec. 3rd, Sir ST CLAIR THOMSON, the President, being in the chair, when papers were read on Surgical and Dental Treatment of Severe Facial Injuries. Major H. D. GILLIES'S paper appears in full on p. 850, and that of Captain KELSEY FRY on p. 852.

Mr. PERCIVAL P. COLE said that from the point of view of function the bony lesion was of more importance than the injury to the soft tissues, and its efficient treatment should consequently hold first place. Primary suture should not be undertaken when complicated by an associated fracture, unless the fracture could be dealt with at the same time. It was better to wait until all sepsis had disappeared and the wound was soundly healed before undertaking the necessary operative measures. The importance of cicatricial contraction was in direct proportion to its crippling effect on movement. Treatment was directed firstly to the prevention, and secondly to the rectification of such limiting effects. In the case of a cicatrising wound threatening the movements of any particular joint, it was the surgeon's endeavour to maintain the joint in that position which would most effectually conserve the movement whose limitation was threatened. In the case of opening the mouth this could be prevented by maintaining the jaws in a position of open bite. With regard to operative procedures, he said that the introduction of fresh tissue was frequently called for, and for that the use of doubly epithelialised flaps was indicated. Where there was a large demand for mucous membrane, skin made an admirable substitute, its texture was suitable, and its extent unlimited. The method of "bringing the parts together" was unsatisfactory, and should be abandoned. Pictures were then shown demonstrating the various forms of flaps used. In one case the patient was very hairy, whilst in another the flap was taken from the scalp. In these cases depilation by radiations was carried out very successfully, and Mr. Cole thought that facilities for treatment by this method should be provided in the case of any jaw centre or hospital.

Reviews and Notices of Books.

1. *Home Care of Consumptives.* By ROY L. FRENCH, M.A., former Secretary, Kentucky Tuberculosis Commission. London and New York: G. P. Putnam's Sons. 1916. Pp. 224. Price 5*s.* net.
2. *The Tuberculosis Nurse: Her Functions and Her Qualifications.* By ELLEN N. LA MOTTE. Introduction by LOUIS HAMMAN, M.D. Same Publishers as above. 1915. Pp. 392. Price $1.50.

1. THE author of this book on the home care of consumptives, who for years has been taking part in the educational and executive campaign against tuberculosis, has collected a large amount of information which he presents in the form of simple aphorisms and eminently sane advice. The illustrations of handy and cheap porches and shelters are most useful. The author insists throughout the book on the need at every stage of seeking the doctor's advice and—taking it. On the subject of marriage and parenthood, for example, he writes: "If either party to the agreement is in bad health, the relationship should not be incurred until the two people have had a full and frank discussion of the entire matter between themselves, and with a competent doctor. All three had better use pretty plain English." The book includes a useful section on foods and their preparation.

2. Miss La Motte brings to her subject the experience gained first as a nurse and later as an organiser and director of the Tuberculosis Division of the Baltimore Health Department. During many years she has, to use her own words, "walked into, and backed out of, many blind alleys ..... and acquired wisdom through the loss of infinite time, effort and money." The losses, though large, have been repaid if the yield, in this book, of shrewd observation, kindly philosophy, and common sense have their effect. Miss La Motte conducts the prospective tuberculosis nurse through a maze of detail, stipulating from the outset that the aspirant to this work must possess health, culture, and a whole string of other gifts. And they are all evidently needed, if the tuberculosis nurse is, as according to this book she must be, the guide, philosopher, and friend of the consumptive from his first sneeze to his last cough. As a matter of fact, the problems with which the nurse has to grapple in Baltimore appear to be precisely the same as those to be solved in England, whether they be the relations of nurse to doctor, to patient, to real philanthropists, or to mere busy-bodies. Consequently this book should prove as valuable on one side of the Atlantic as the other, and any nurse who has read, marked, and learned it from cover to cover should be well on her way to master the subject. We do not, however, find Miss La Motte a completely sound guide. Though she discloses no great practical knowledge of sanatoriums and their methods, she "crabs" this branch of tuberculosis work, and, speaking of the sanatorium, declares (p. 209): "We could fight quite as successfully without it—possibly better, since the money devoted to the upkeep of these very costly institutions could then be diverted to more radical purposes." Miss La Motte is hardly fair to the nurse who accepts her sweeping verdict as orthodox and unchallenged.

Congenital Word-Blindness. By JAMES HINSHELWOOD, M.A., M D. Glasg., late Surgeon to the Glasgow Eye Infirmary, &c. London: H. K. Lewis and Co. 1917. Pp. 112. Price 4*s.* net.

Dr. Hinshelwood has collected in book form various studies and observations made over a number of years in a subject to which he has devoted much attention and with which his work has helped to familiarise the practitioner. He cites in some detail various cases of congenital word-blindness that have come under his notice, in one of which there is a report of the pathological condition. The proposal is made to distinguish three groups of the affection—viz., (1) occurring more or less by itself; (2) in association with mental defect; (3) of milder degree such as is said to be common in elementary schools, being little more than a deficient aptitude. To these groups it is suggested that the terms congenital word-blindness, congenital alexia, and congenital dyslexia, respectively, should be applied. It is in a matter of this kind that the expert neurologist is unable to follow the author's contention, for these proposed terms are distinctions without a difference. There is no attempt in the book to bring the treatment of the subject into line with recent work on aphasia; agnosia, of which congenital word-blindness is but a part, is not, apparently, mentioned. For the busy practitioner, however, it serves a useful purpose in directing his notice to a not infrequent condition which may be at first rather puzzling. The chapter on treatment contains much useful and practical advice.

Collected Papers on Analytical Psychology. By C. G. JUNG, M.D., LL.D., formerly of the University of Zurich. Authorised translation by Dr. CONSTANCE E. LONG. Second edition. 1917. Pp. 492. Price 15*s.* net.

WE reviewed at length the first edition of this collection when it appeared two years ago. Two chapters are now added in which Dr. Jung develops further his ideas of introversion and extroversion. In his foreword to these new chapters the author applies his doctrines to the tragedy of world warfare. He says:—

The psychological events that accompany the present war—the incredible brutalisation of public opinion, the epidemic of mutual calumnies, the unsuspected mania for destruction, the unexampled flood of mendacity, and man's incapacity to arrest the bloody demon—are they not, one and all, better adapted than anything else, to force obtrusively the problem of the chaotic unconscious—which slumbers uneasily beneath the ordered world of consciousness—before the eyes of every thinking individual?

The psychology of warfare is undoubtedly a subject of absorbing interest which will claim the attention of the keenest minds for many years to come, but we do not know what share the rather facile views of the "psycho-analysts" will have in its solution.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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WEDNESDAY, NOV. 28TH.

THE Council resumed its sittings, Sir DONALD MACALISTER, the President, being in the chair.

Penal Cases.

The Council proceeded to consider penal cases.

The first two cases to be considered were adjourned from previous sessions, and as both practitioners could produce a good record in the intervals no penal action was taken.

In the next case the Council adjudged James George Silver Jamieson, M.D. Edin., to have been guilty of infamous conduct in a professional respect in that he had been convicted in the High Court of Justice of adultery with a patient, and directed the erasion of his name from the Medical Register.

The next case was that of Ernest Wardman-Wilbourne, L.R.C.P. Edin., L.R.C.S. Edin. Evidence having been given of a conviction at the Nottingham Assizes for an offence against a woman, his name was removed from the Register.

The Council then took the case of Reginald Nitch Smith, M.R.C.S. Eng. 1894; L.R.C.P. Lond. 1894, who had been summoned to appear before the Council on the following charge:—

"That being a registered medical practitioner you abused your position: (1) By selling to Mrs. —— at exorbitant prices, at frequent intervals, and otherwise than as a medicine in the course of your treatment of her, large quantities of a narcotic toxicant drug named heroin, and knowing that she had formed the drug habit continued so to supply her to her moral and physical detriment: (2) By selling to the said Mrs. —— the said drug at exorbitant prices and at frequent intervals for an officer and men, members of his Majesty's Forces, contrary to Regulation 40 of the Defence of the Realm Regulations, and of the Order of the Army Council, dated May 11th, 1916. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

Mr. Nitch Smith attended, and was represented by Mr. Colam, K.C., and Mr. Elsley Zeitlyn (instructed by Messrs. Smith and Hudson, solicitors).

The complainant was represented by Mr. C. F. Gill, K.C. (instructed by Messrs. Simmons and Simmons, solicitors).

Mr. GILL, in opening the case for the complainant, said that the woman being supplied with drugs by a medical man at one end of Bond-street had, under their influence, gone to the other end to steal jewellery. It was ordered by the judge at the Central Criminal Court that the action of Mr. Nitch Smith in supplying the drugs should be brought to the knowledge of the General Medical Council. The evidence showed that from January last down to her arrest in July last Mr. Nitch Smith had supplied the woman with tubes of the drug, that she had paid him by cheque, and that she frequently sent messengers for a supply.

Mr. NITCH SMITH, called on his own behalf, stated that he had practised for 18 years in New Bond-street. The patient had told him, he asserted, that she had been taking heroin when on war work in France, and that on account of the restrictions in England she could not obtain it without a medical man's certificate. She asked him to prescribe for her on two or three occasions, and then she asked him to obtain the drugs for her, which he did. She told him that she was sending some of the drug to France. He saw her 18 or 20 times, and observed nothing to suggest that the drug was acting in any way detrimentally to her system.

THURSDAY, NOV. 29TH.

Penal Cases.

The hearing of the case against Mr. Reginald Nitch Smith was resumed.

Mr. NITCH SMITH, in cross examination, maintained that he had not examined the cheques which were paid into the bank, nor taken account of them.

Re-examined by Mr. COLAM, witness said that he did not know that his attendant was supplying the drug to the woman. He had been ill for two years and had been attended by various medical men. His attendant would open any letter which came to him unless it was marked "Private" or "Personal."

Miss MARGARET HALL, attendant at Mr. Nitch Smith's rooms, in evidence said that she had acted in that capacity for 12 years, and that on many occasions she gave the patient the drug unknown to Mr. Nitch Smith.

Mr. Nitch Smith's name was erased from the Medical Register.

Two more penal cases were heard during the day, but either practitioner was removed from the Register. In one of these cases, where medical certificates had been given irregularly, the President warned the doctor of the serious nature of his offence, whilst postponing judgment till the May session of the Council.

FRIDAY, NOV. 30TH.

The Council considered the case of Bertie Cecil Eskell, registered as of 26, Zealand-road, Bristol, M.R.C.S. Eng. 1910, L.R.C.P. Lond. 1910, who had been summoned to appear before the Council on the following charge:—

"That being a registered medical practitioner you abused your position by committing adultery with Mrs. Kathleen Margaret Dobson Mercer Adam, with whom and whose husband you stood in professional relationship.

And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainant was Mr. John Bucknall Mercer Adam, who was represented by Mr. Holman Gregory, K.C., and Mr. Horace Rowlands (instructed by Messrs. Routh, Stacey, and Castle).

Captain Bertie Cecil Eskell, who is serving in the Royal Army Medical Corps, attended, and was also represented by Mr. R. W. Turner (instructed by Messrs. Hempsons).

Mr. HORACE ROWLANDS said that the complainant was a deputy conservator of woods and forests in Burmah. He met Captain Eskell, or as he then was Lieutenant Eskell, in the train proceeding up country from Rangoon. They found that they had attended the same school. Mr. Mercer Adam asked Lieutenant Eskell to call at his house, as he was going to the hospital at the place where Mr. Mercer Adam resided. Lieutenant Eskell had been invalided. He afterwards stayed at the complainant's house, where he met Mrs. Mercer Adam, but subseqently he went into cantonments. In June Mr. Mercer Adam broke down in health and Lieutenant Eskell ordered him to bed for a rest of a fortnight. He had also treated Mrs. Mercer Adam for troubles, and in that way counsel submitted he had acted as a medical practitioner. Mrs. Mercer Adam became pregnant. In November, 1916, Lieutenant Eskell was recalled, and counsel stated that he pressed his view that she should go to England for confinement. At Rangoon Lieutenant Eskell arranged that a medical practitioner, Lieutenant-Colonel Barry, should see the patient in consultation. He confirmed Lieutenant Eskell's opinion. Lieutenant Eskell met the lady in England, and she never went, as it had been arranged, to her husband's people. Since then counsel stated that she had lived with Lieutenant Eskell.

Mr. MERCER ADAM gave evidence. He said that when Lieutenant Eskell was living in his house a second time he treated him for a breakdown. His wife suffered from nervous attacks and Lieutenant Eskell treated her. When he asked him to treat her he (Lieutenant Eskell) suggested hypnotism. When his wife became pregnant Lieutenant Eskell advised him to send her to England.

Mr. ROWLANDS: Did you have to pay any charges to Dr. Eskell?

Mr. MERCER ADAM: I pressed him to take fees, but he refused.

In bringing this complaint in July last did you frame it to break Captain Eskell?—I considered that it was a public duty. I hoped also to save my wife from him.

Dr. E. C. ROBERTSON-FULLERTON was called as a witness by Captain Eskell. He stated that he had attended Mrs. Mercer Adam on the occasion of her confinement in this country. His opinion was that it was very undesirable that she should have been confined in India.

Captain BERTIE CECIL ESKELL also gave evidence. He stated that he had been previously in practice in Bristol, but he joined the Army in 1915. He had gone to Mr. Mercer Adam's house as a guest. He was continually there, and Mr. Mercer Adam knew it. He was not there as a medical man. A medical man staying at a house was frequently asked things. He admitted that he had formed an affection for Mrs. Mercer Adam, but the decision that she should go to England was taken on the advice of a medical man in Rangoon and not on his advice. Her husband knew that he was fond of Mrs. Mercer Adam. He admitted that misconduct had taken place, but he denied that he had occupied the position of a medical man towards Mr. and Mrs. Mercer Adam. There was never any mention of fees. He denied also that there was anything in the story of hypnotism. He admitted writing to Mr. Mercer Adam from England telling him that Mrs. Mercer Adam and he had an undying love for each other, and also that the expected child was his.

The Council adjourned.

SATURDAY, DEC. 1ST.

Penal Case.

The Council proceeded with the hearing of the case against Captain Bertie Cecil Eskell.

Mrs. MERCER ADAM, the wife of the complainant, gave evidence. She stated that Captain Eskell had been taken to her house in Burmah as an invalid. She did not want him. She always had a separate room from her husband, with

whom she did not agree. He was a very morose man and had fits in which he threw her down several times. Her husband told her to nurse Captain Eskell and he placed a mattress by the side of the Captain's bed for her to sit on.

Mr. R. W. TURNER: It is said that you were hypnotised by Captain Eskell.

Mrs. MERCER ADAM: I do not believe in hypnotism. When she saw her husband in London he told her that if he did not go back to him in half an hour he would go to the General Medical Council to break Captain Eskell and break her. She admitted that Captain Eskell was the father of her child, but she denied that he was ever her medical adviser,

Cross examined by Mr. HOLMAN GREGORY, K.C., Mrs. MERCER ADAM maintained that Captain Eskell never treated her in his capacity as a medical man.

The PRESIDENT announced that the Council having adjudged Captain Bertie Cecil Eskell to have been guilty of infamous conduct in a professional respect had directed the Registrar to erase from the Medical Register the name of Bertie Cecil Eskell.

Dental Representation.

The PRESIDENT announced that a letter had been received from the Privy Council in regard to the resolution dealing with the representation of the dental profession on the General Medical Council. It appeared to the Lord President that the proposal required legislation, for which at present there was no adequate opportunity.

Entrance Examinations.

Dr. MACKAY submitted a report by the Education Committee upon examinations in secondary schools in England. This report stated that discussion of matters connected with entrance examinations had been postponed because it was expected that important changes were contemplated by the Board of Education.

It was further stated that a new Board of Examiners was created and new system of examination tests established in September last. Should the scheme realise the expectations of those who, after much careful study, had developed and matured it, there could be no doubt that the complicated problem with which the Council, in dealing with the preliminary education of the student, had been confronted in the past, would be profoundly modified in the immediate future. Meanwhile, the Committee would advise that, at present, and until the new Examination Board had had time to complete the reorganisation with which it was charged, no further action with reference to the conditions of the examination in general knowledge be taken by the Council.

The report dealt at some length with the multiplicity of entrance examinations required by various professional bodies in England and the lack of a school-leaving certificate such as obtained in Scotland. Under the new arrangements all examinations to which the pupils of State-aided secondary schools were submitted would be under the control of a committee of experts representative in the broadest sense of purely educational interests. The "Secondary Schools Examination Council," which had been established, included representatives of all the Universities, of the managing bodies of the State-aided schools, and of the teachers. The examinations would be conducted by the Universities under the supervision of the Examination Council. There would be two examinations:—(1) The "Schools Examination," suitable for pupils of 16, and qualifying for University matriculation if passed with credit; and (2) the "Higher Schools Examination," adapted for pupils of about 18 years of age. Each school might be examined on its own syllabus; pupils would be put forward in classes rather than individually; in doubtful cases the school record would be taken into account; and the subjects included in the "pass" would be endorsed upon the certificate. Admission to the examination would be in the majority of instances by way of a definite period of instruction in a secondary school, but arrangements would be made for the inclusion of those who approached by other than the usual channels. The success of the scheme demanded the coöperation of the Universities and the professional bodies with the Board of Education, not only by the acceptance of the new certificates, but also by the refusal to recognise substitute examinations not approved by the Examination Council, which might tempt the pupil to curtail the school course. For the first time definite standards of examination for pupils at different ages were about to be established and it would be incumbent upon all who were concerned in the progress of education to assist in maintaining these. The great advantage which the scheme offered to the country by permitting the further development of school and university to take place *pari passu*, could only be realised through the avoidance of conflict of interest between the two grades of educational institutions and through the grant to the schools of complete freedom from external influences inimical to their true teaching work. It seemed to be certain that in the near future all the general entrance examinations in the country which were conducted by, or on behalf of, the Universities would be coördinated and classified, and it was to be hoped that those of the College of Preceptors, the only examining body of consequence not associated with any of the universities, would be included in the classification. If this were done, the gradual advance of the standard of the entrance examination in medicine, which had been for long an object of the General Medical Council, should now present no difficulty, as it would be possible to carry it out in strict harmony with the educational progress of the country. It was, therefore, of supreme importance that the Council should be maintained in close touch with the Board of Education and the "Secondary Schools Examination Council." It would probably be found of advantage, however, to grant to the Students' Registration Committee even a greater measure of freedom than it had exercised in the past in dealing with the educational qualifications of candidates who were above the school age.

It was at first the intention of the Education Board that a "Standing Committee" of Representatives of the Professional Bodies should be formed, and that one member of this Committee should have a place upon the "Secondary Schools Examination Council." These particular proposals were submitted to a conference of representatives of the professional bodies held in London on July 24th, and attended on behalf of the Education Committee of the General Medical Council by Dr. Norman Moore and Sir Francis Champneys. Influenced by the views expressed at the conference, the Board subsequently withdrew the proposal to grant representation upon the Examination Council to the suggested 'Standing Committee of the Professional Bodies." There remained, however, for settlement the question as to whether or not any good result was likely to arise from the formation of a committee representing interests and aims so widely divergent as those of the bodies which had been grouped together undoubtedly were. It would be seen that the delegates of the General Medical Council were of opinion that the purposes of the Council would be better served by direct communication with the educational authority than they could be were approach to be made through the suggested "Standing Committee" The Education Committee strongly endorsed this opinion.

Dr. Mackay said that this was the only report coming from the Education Committee this year on which he had any remarks to make. There was another report on the question of the compulsory inclusion of Latin in the preliminary examination in general knowledge, in which it was stated that in examinations of the junior order and open to pupils of 16 years and upwards Latin should continue to be regarded as a requirement. In this respect the committee was not recommending the Council that anything should be done at the present time. But the report as to examinations in secondary schools in England dealt with matters which were of great importance. The subject had again and again come under the notice of the Council. The work of the secondary schools had been greatly hampered in recent years by the multiplicity of examinations. The steps which the report detailed represented a prospect of advance and progress in education. In conclusion, he moved the adoption of the following recommendation:—

That as the professional bodies which demand an entrance examination are widely divergent in their aims, the Council is of opinion that they cannot be combined in a Joint Standing Committee, which might reasonably be expected to take united action. On the other hand, the Council would welcome the privilege of conference from time to time, as occasion arises, with the Education Board or the Secondary Schools Examination Committee.

Sir A. CHANCE seconded, and the recommendation was adopted without discussion.

Dr. MACKAY also moved the adoption of a recommendation to the effect:—

That the Council postpone the discussion of the subjects to be included in the junior examinations in general education until the opportunity has been afforded of observing the effects of the new examination scheme introduced by the Board of Education.

He emphasised the necessity of waiting to see what happened in regard to secondary education under the scheme of the Board of Education. The Education Committee could then report to the Council.

Dr. NORMAN MOORE seconded. He said that he had been struck by the amount of business which must be got through before the scheme of the new Board of Examiners was settled. Important as the medical entrance examinations appeared to the Council, they represented only a fragment of what had to be dealt with.

The recommendation was adopted.

Apothecaries' Hall of Ireland.

Sir FREDERICK TAYLOR submitted a report from the Examination Committee on various matters relating to the Apothecaries' Hall of Ireland. He stated that a letter had been received protesting against the employment of a deputy to attend the examinations of this licensing body. The Irish Branch Council had appointed Dr. William Boxwell as deputy to attend on behalf of the General Medical Council the examinations of the Hall for one year ending Dec. 8th, 1917. Dr. Boxwell was absent on service at the front during part of his period of office, and the Irish Branch Council in May appointed Dr. R. J. Rowlette as temporary deputy. Dr. Boxwell suggested that his report should be deferred until the termination of his year of office, and it would be presented to the Council next May. In these circumstances he moved that the Irish Branch Council should be authorised to appoint for the period of one year a deputy to be present on behalf of the General Medical Council at the professional examinations held by the Apothecaries' Hall.

Dr. N. WALKER seconded.

Dr. MAGENNIS said that he had no objection to an inspection of the examinations of the Apothecaries' Hall of Ireland provided other bodies were also inspected.

The recommendation was adopted.

Pharmacopœia Committee.

On the motion of Dr. NORMAN MOORE, the report of the Pharmacopœia Committee was adopted. It was in the following terms:—

The number of copies of the British Pharmacopœia, 1914, which were sold by the publishers between May 20th and Nov. 24th, 1917, was 1220. The number sold in the year ending Nov. 24th was 2319. The total number sold since the date of publication is thus 29,354. A third

issue of 5000 copies has been prepared; in this issue a misprint detected last year is corrected.

In pursuance of the power delegated to the committee by the Council last May, further communications on the subject of glycerine and sugar were made to the Home Secretary's Committee and other authorities. It appeared to be necessary in the national interest that immediate steps should be taken to discourage the use of these substances in pharmacy, and the committee agreed unanimously to the temporary withdrawal from the Pharmacopœia of the official directions for their use in the compounding of certain preparations. The proper notices for the alteration and amendment of the British Pharmacopœia, 1914, were accordingly published on behalf of the Council in the *Gazettes* of London, Edinburgh and Dublin, on July 27th, 1917, and are now operative. A leaflet setting forth the terms of the *Gazette* notice has been inserted in each copy of the new issue of the Pharmacopœia.

The British Medical Association has forwarded a resolution passed by its annual Representative Meeting in July, 1917, to the effect that, in the opinion of the Association, the general use of the metric system in the teaching of dispensing, prescribing, and treatment would be beneficial to the scientific interests of the medical profession. The Pharmacopœia Committee desire to express their concurrence with this opinion.

The Pharmaceutical Society of Great Britain has published a series of unofficial formulæ for certain preparations which have hitherto contained glycerine or sugar. These may usefully be adopted by prescribers in place of the formulæ that have been temporarily withdrawn. It is desirable that uniformity should, as far as possible, be preserved in the compounding of medicines which may still be ordered or dispensed under the names that were formerly official. The action of the Pharmaceutical Society in the present emergency is thus timely and useful.

Dental Education.

Mr. TOMES submitted a report from the Dental Education and Examination Committee. The committee had drawn up rules and recommendations as to the course of study in accord with the conclusions provisionally arrived at by the Council in 1916. This report was still before the Council, and it was for the Council to decide whether its consideration should be proceeded with, or, in view of the appointment of a departmental committee on the Dentists Act, should be again postponed, a course which the Dental Education Committee thought might be desirable.

In reference to this report, the University of Manchester and the University of Liverpool had reaffirmed their opinion that the minimum period for the study of mechanical dentistry should be 2000 hours at a recognised school, or 2500 hours with a registered dentist. The University of Manchester was further of opinion that private pupilage should be abolished. The University of Bristol had given a general approval to the report.

The report was adopted.

Public Health Diplomas.

Sir J. W. MOORE, in submitting the report of the Public Health Committee, stated that the committee had had before it the question of recognition of work carried out in connexion with the Army in the field in lieu of certain parts of the courses of study prescribed for the diploma in Public Health. Lieutenant-Colonel W. W. O. Beveridge, the Assistant Director for Medical Services (Sanitation) with the Expeditionary Force in France, had attended and given the committee information as to the conditions existing in the British Armies in the field which would justify temporary modifications in the rules and regulations for the diploma in Public Health. The committee had decided to suggest the adoption of certain temporary modifications in the existing rules and regulations in the case of medical officers of the Expeditionary Forces.

On the motion of Sir J. W. MOORE the following recommendation was adopted:—

Additional Note to Rule 2.—Alternative Arrangements for British Armies in the Field. That the laboratory experience at a Base Hygiene Laboratory, when and so far as approved by the General Medical Council, shall count towards the four months' laboratory course prescribed by the Council; and the laboratory experience acquired by medical officers on the staff of hospitals for infectious diseases shall count for such part of the laboratory course for the Diploma in Public Health as the A.D.M.S. (Sanitation) may recommend, and the General Medical Council on consideration may approve.

Another recommendation was adopted defining the class of officers who must be in charge of laboratories in which the course is taken under the alternative arrangement.

Medical Certificates.

Sir A. NEWSHOLME said that it was well known to some members of the Council that the national machinery of recruiting was being very seriously impeded by the unsatisfactory medical certificates received. Further publicity, he said, should be given to the remarks of the President on this subject. He should have liked if they could be distributed to every practitioner in the country, who should be informed that all certificates as to medical conditions should, whenever possible, be based on personal observation, and where that was not possible the certificate should embody a statement to that effect. This suggestion might be well communicated to the Medical Advisory Board in the Ministry of National Service with a view to consideration by them to see if any such steps could be taken.

Dr. NORMAN MOORE thought that the vast majority of the medical profession knew quite well that they ought to tell the truth. It was nothing more than that.

Sir A. NEWSHOLME remarked that some medical men did not appreciate the difference between the facts which came to them by personal knowledge and statements made to them. That fact needed to be brought home to a small minority.

The PRESIDENT said that the question was whether in the circumstances of the Ministry of National Service, where a large number of certificates were required from medical practitioners, it might not indicate to practitioners the nature of the certificates which alone would be accepted and be helpful for the purpose for which they were given. If the Ministry thought it desirable it would probably issue an intimation. It was suggested that the Council should communicate to the Ministry its warning notice and the passage from his speech. That would be done as a matter of communication.

This concluded the business of the session, and the Council rose, to reassemble in May.

New Inventions.

DOUBLE CINCH BINDER.

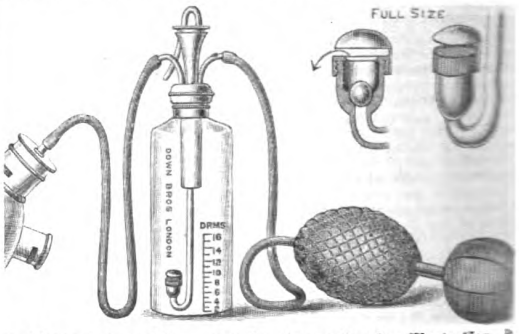
Mrs. Morison Ltd., of 47, South Molton-street, Bond-street, W., has made a double cinch binder with metal plate for a patient of mine with a ventral hernia following cholecystectomy. The hernia was the size and shape of a half cocoanut. The patient, who was a big man aged 58, with a circumference of 42 inches, can now shoot and do a good deal of farm work. Without the binder he could do practically nothing, and had many dyspeptic symptoms. The binder is well fitted at back and sides with bone stays, and buckles from alternate sides like a many-tailed bandage, so that great pressure is exerted on the hernia itself, without the binder being too tight. Moreover, the appliance is not cumbersome and is suitable for day or night wear.



Star Hill, Rochester. CLEMENT WHITE, M.D. Camb.

A MODIFICATION OF THE JUNKER INHALER.

IT is well known that accidents have at times occurred when using the Junker inhaler through the bellows having been by mistake attached to the outlet instead of the inlet tube, and the contents of the bottle so expelled. I have had made a modification of the inhaler which renders the accident impossible. As is shown in the illustration, it consists of a ball valve which is attached to the end of the inlet tube inside the bottle. It is simple, cannot get out of order, and quite does away with the danger mentioned.



Messrs. Down Bros. are the makers.

MORRIS RIGBY, M.R.C.S., L.R.C.P. Lond.,
Capt. R.A.M.C.T.; Anæsthetist, Sussex County Hospital;
Anæsthetist, 2nd Eastern General Hospital, Brighton.

THE TREATMENT OF RHEUMATIC CONDITIONS BY PHYLACOGEN

NOTE. The clinical report quoted in this letter is published by permission. On request we shall be pleased to place any *bonâ-fide* enquirer in communication with the author.

We have never claimed that Phylacogen will cure every case of rheumatism, much less every case of so-called rheumatoid arthritis. Nevertheless, the results obtained in the treatment of arthritis by means of Phylacogen have been most encouraging, and where failures have been met with it is a question worthy of consideration whether the cases were due to rheumatic infection, or whether the arthritic changes should have been ascribed to gonorrhœal infection, syphilis, tubercular disease, or to gout.

Believing that medical men appreciate *bonâ-fide* clinical reports, we have pleasure in submitting the following, which was sent us quite spontaneously by the medical man concerned, who also gave us permission to publish his report anonymously:—

A. M., aged 26 years, states that during the winter of 1915-16 she suffered from pains in her hands and feet. In June, 1916, the joints of the little fingers of both hands became very swollen and painful. She went under medical treatment without receiving any benefit. The disease progressed until the wrist-joints and the small joints of both hands and feet became swollen and painful. In October, 1916, she consulted another medical man and received only temporary benefit. In February, 1917, she was sent to Dax and underwent a course of mud baths and internal medication. She says she was very much benefited by the course at the time, but afterwards the disease progressed and she became so ill that she had to give up her position as a governess and return home.

Towards the end of last July she consulted me and her condition at that time was as follows:—

Her general health was very poor, and when fully dressed she weighed only 112 lbs. Both wrist-joints and the small joints of both hands and feet were swollen and tender on slight pressure. She complained of pain in the right spheno-mandibular joint and in both elbows and knees, but there was no swelling. She experienced great difficulty in walking, and on account of the pain caused she "dreaded shaking hands with people." Her temperature was 99° and her pulse 84. I advised her to undergo a course of Phylacogen treatment, and she consented.

On August 7th I injected hypodermically 1 c.c. and repeated the dose in 48 hours. Keeping the interval at 48 hours, I increased the dose by ½ c.c. for two doses, and then by 1 c.c. until she had got 4 c.c. in the dose. As that caused a slight reaction I increased the interval to 72 hours and repeated the dose (4 c.c.). As the dose was now well tolerated I gradually increased it by 1 c.c. (still keeping the interval 72 hours) until she was getting the full dose of 10 c.c. The first dose of 10 c.c. caused a reaction, but the rest were well tolerated. She got in all 145 c.c. of Rheumatism Phylacogen. Her condition began to improve after she had received 12 c.c., and continued to do so during the whole course of treatment. I saw her to-day—33 days after the last dose was injected—and the improvement is maintained.

She has no pain or tenderness in any of the joints, but the swelling has not completely disappeared from her wrists or from the middle interphalangeal joint of the second finger of her right hand. She is well able to walk and the ordeal of shaking hands has no terror for her. Her general health is very good and her weight has increased by 12 lbs. Her temperature and pulse are both normal.

I would like to emphasize the absence of any great reaction; the early stage at which an improvement set in; and the marked manner in which it was maintained. I am quite pleased with the results obtained; so is the patient. (*Report dated October 30th, 1917.*)

We shall be glad to send a copy of our booklet on Phylacogen Therapy to any medical man who desires a copy.

PARKE, DAVIS & CO.
50, Beak St., Regent St., London, W.1.

Rhéantine is put up in hermetically sealed tins, containing 28 spherules.



Dosage:
Two spherules twice a day.

Rheantine is the Entero-vaccino-therapeutic method in regard to Gonococcic Treatment Messrs. Lumière and Chrevotier had since 1913 been undertaking a fresh series of experimental and clinical researches with reference to this subject. After considerable difficulties in their endeavour to find a suitable medium for the cultivation of Neisser's diplococcus, they discovered one based on the wort of beer, which perfectly answered to their requirements, and succeeded in preparing desiccated cultures, in vacuo, forming a perfectly anhydrous and stable vaccinal powder, containing about 500 millions bacilli per milligramme. This is administered in keratinised spherules. The clinical effects of Rhéantine on gonorrhœa in its various stages and in the complications of the disease are rapid, well marked, and of the most encouraging character.

From a Paper read before the Therapeutical Society of Paris (*14th June*, 1916):—

..... "Under the microscope these successive changes are demonstrated in equally definite stages; whatever may have been the duration of the disease, the characteristics of the pus become rapidly modified; after two or three days' treatment the gonococcus, first intracellular, becomes exterior; it ceases to act as a parasite on the polynuclear leucocytes and the large epithelial cells—one then finds them disseminated outside the leucocytes.

"Finally, some days later, if the administration of Rhéantine is continued, the condition undergoes still further change, the gonococci become agglutinated, arranged in a mass, and finally bacteriolysed."

These clinical and bacteriological observations constitute irrefutable proof of the efficacy of antigonococcic bacterio-therapy by the gastro-intestinal tract.

The clinical reports of various doctors or noted by ourselves, show that antigonococcic bacterio-therapeutics are capable of giving highly satisfactory results, both in acute and chronic forms of urethral gonorrhœa and also in the various infectious complications due to Neisser's bacillus.

BURNS
VARICOSE ULCERS
RHEUMATISM
NEURITIS

AMBRINE

(The only Authorised Preparation of Dr. Barthe de Sandfort. Various Imitations compel us to make this statement.)

GOUT
NEURALGIA
CHILBLAINS
SCIATICA

AMBRINE instantly alleviates pain, promotes rapid healing, forms a sure Protection against Infection of the Wound.

Although the dressing with AMBRINE is occlusive and adhesive, it becomes after a short period non-adherent and can be removed without pain, hæmorrhage, or injury to the newly forming tissues. The healing takes place without leaving scars or contraction.

May be applied with camel's hair brush, but our specially designed spray greatly facilitates the application.

The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

"..... The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient, because entirely painless; it is convenient to the surgeon, because easily and quickly applied. ..... It is possible that the treatment would be useful in dealing with ordinary ulcers, and in any case it is certain that the study of its application to the raw surfaces is worth pursuing. ....."

26/10/17. E——

DEAR SIRS,—I thank you for the Ambrine. I found it very effective in a chronic and very painful varicose ulceration of leg.

Please send some more Ambrine, about 5s. worth.

A. G. W.,
M.R.C.S., L.R.C.P., &c.



THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

"Attention is being drawn to the remarkable success of the Ambrine War treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War in reply to the Deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St. Nicolas, so the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ....."

The most efficient means and method of ensuring active **Hyperthermal-Therapy** to the practical treatment of **Varicose Ulcer, Rheumatism, Gout, Arthritis, Neuralgia,** and similar affections.

Further Literature sent on Application to Medical Practitioners by the Sole Agents for the British Empire—

THE ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C. 1.
(Late M. BRESILLON & Co.)

Telephone: HOLBORN 1311. Telegrams: "AMPSALVAS, LONDON

THE LANCET.

LONDON: SATURDAY, DECEMBER 8, 1917.

Intensive Medical Treatment.

IT is now three years since the Medical Research Committee settled down to its task of promoting investigation into the origin and treatment of disease with a view to making effective the great scheme of National Insurance, from whose funds its income is drawn. The present report[1] brings the account of work done down to the end of September, 1917, and the first glance into it confirms the obvious fact that a division of the schemes of inquiry into two sections—one of peace and one of war—can no longer be maintained except as a matter of convenience in indexing, since the investigations have become inextricably intertwined. To a nation at war any gain in the store of available medical science is a matter of vital concern, whether it immediately affects soldiers or civilians. The study of problems which emerge in war-time out of unusual and temporary conditions will have permanent value in a peaceful future. The stress of industrial work due to munition-making has stimulated a study of the laws of fatigue and of right living, while the limitation of food-supplies has forced us to gain a clearer knowledge of essential biochemical and dietetic laws.

The fact of the collection of large numbers of men under military rule has made it possible to obtain information, otherwise almost unprocurable, as in the great research into the renal efficiency of 50,000 young men leading active lives in a training camp. Medical investigation in peace-time at civil hospitals has too often been chiefly directed to the study of advanced stages of disease. War conditions have stimulated the study of the early stages in which disease can be most easily checked as well as most fruitfully studied. Prevention is more important than cure, and the rapidly organised study of irritable heart in soldiers and of the early symptoms of T.N.T. poisoning have already had results of practical importance. The employment of physiological principles in the administration of oxygen, first tested in cases of gassing and then applied to the needs of flying men at high altitudes, will of necessity react helpfully on the methods of restoration in mining accidents. The Committee states its belief that the devotion of a Government fund to research in medicine has already played a large part in fostering a growing trust in research work in other spheres. On the lowest basis the monetary gain from the Committee's work is already incalculable; each of at least half a dozen of the schemes put into practice has saved the country from expenditure which must be reckoned in multiples of the whole of the Medical Research Fund. Some readjustment of the sources of the fund, which has yielded in the current year £7000 less than was expected, is therefore abundantly justified.

The report gives telling instances of the value of assembling a large number of similar cases, whether medical or surgical, for the purpose of collective study, and another good example can be found in the papers, which we print in the present issue, by Major H. D. GILLIES and Captain W. KELSEY FRY. They are the first of a series from the Queen's Hospital for Facial Injuries at Sidcup and well illustrate intensive treatment. At this hospital the rapid evolution of the successful remedy of apparently hopeless facial injury has largely been the result of friendly rivalry between a number of active intelligences brought to bear upon collected material of an unusual character. Such an intensive culture of scientific method under the stimulus of collective interest and criticism is here seen to produce results which could hardly have been attained by a generation of sporadic individual effort. It is worth while to try to draw the right conclusions from this success, because it cannot lie merely in the grouping together of similar cases in institutions. No point was brought out to more effect in the recent discussion on sanatorium treatment at the Medical Society of London than the disastrous result which may attend the grouping together of cases of chronic disease, unless the necessary stimulus towards recovery is provided. Dr. HENRY ELLIS'S remark in that debate that institutional treatment of the tuberculous might fairly be judged by the presence or absence of what he termed "sanatorium disease" evidently commended itself to many of his hearers. Whatever the administrative advantages gained, the assembly of patients suffering from similar ailments is, at least from the medical point of view, a questionable undertaking unless a continued evolution of the methods of recovery is present as a constant stimulus to staff and inmates alike. Our record of asylum practice is none too encouraging in this respect, and the detailed rather than the concentrated treatment of neurasthenic cases, which has received much influential support has its foundation on this fact. Intensive treatment does not necessarily imply institutional treatment, which presents its own particular difficulties and dangers.

[1] The Third Annual Report of the Medical Research Committee. His Majesty's Stationery Office. 6*d*. net.

The Personation of Medical Practitioners.

SIR DONALD MACALISTER, in the presidential address at the winter session of the General Medical Council, which has just been concluded, called serious attention to the fact that the present shortage of medical men was inducing unqualified individuals to personate registered medical practitioners; and we have received from a correspondent a suggestion that on registration all medical men should have their finger-prints officially taken.

for he believes that personation of medical men by impostors is common. Our correspondent's letter was provoked by the recent case of the man SIDDONS. It will be recalled that SIDDONS, who was committed for trial at Liverpool Assizes early in the autumn, for personation of a medical man among other things, escaped justice by committing suicide a few days before his case would have been heard. Conviction upon some at least of the charges against him was certain, and the Defence of the Realm Act would have been found to have added penalties to those incurred by persons who are detected in signing certificates and otherwise posing as duly qualified medical practitioners without being such. SIDDONS, or VIRTUE, as his name in comical fact was, if not uniformly successful in a criminal career, was an ingenious and pertinacious rascal. At some time of his life he obtained a sort of training in the direction of veterinary medicine, but he found that to pretend to be a medical man, and to personate some individual not likely to be confronted with him, offered a better opportunity of earning a living. His most striking performance consisted in the personation, a few years ago, of Mr. R. H. BARBER, a medical man who had been drowned abroad and whose name had not been removed from the Register. In the character of R. H. BARBER, SIDDONS practised medicine for five years in various places without being detected, but belated suspicions being aroused the charge of personation was easily established. The expiry of a sentence for this offence of nine months' imprisonment in the second division left him at liberty to resume his courses, and the war, which commenced soon after his release, afforded him a good opportunity. The bogus practitioner was not, however, satisfied with drawing illegal emolument for services which he could not render: he endeavoured to enrich himself by underclassing the recruits whom he examined, and awoke thus the official vigilance which had been sadly at fault when he secured his responsible position.

The whole story came as somewhat of a shock to the public, as we have had recent occasion to learn; so that it may be well to point out that no large number of impostors of the SIDDONS type can exist at any one time in the kingdom, and that very few of these escape ultimate detection. There may well, however, be such persons, and Sir DONALD MACALISTER'S warning proves that their existence is likely; nor need we wonder, when we read in the police reports of their ultimate detection and punishment, how they managed to succeed for a brief period. Such men usually live in crowded centres where they can practise chiefly among the poor and ignorant, without associating themselves in any way with the medical life of the locality. If thrown accidentally into communication with any of those with whom professional comradeship has been assumed, they can decline from motives of taste to talk "shop," or can ask to be reticent concerning the confidences of a patient. A rank impostor would assuredly betray himself if he made any close medical acquaintances, but by steering clear of all association with medical men a surface familiarity with practice will cover depths of ignorant pretence. Reference to the Medical Register or Medical Directory if doubt arises does not settle the matter of qualification in the case when the deceiver is also an impersonator, who can only be detected by some inconsistency of dates or localities with apparent age or appointments. It may not be desirable that medical men should play the part of detectives and be unduly curious as to their colleagues' antecedents, but at the same time where the credit of their profession and the safety of the public are both concerned, their expert knowledge is rightly exercised in setting on foot inquiry to be carried out by others if a legitimate reason occurs for suspecting fraud. The Medical Register is now most carefully kept, but no amount of zeal on the part of the Registrar will entirely prevent fraud while many of the medical profession neglect to notify the bureau of changes of address. Government departments and public authorities should above all exercise extraordinary care at the present moment, when a shortage of qualified medical men is accompanied by wholesale, if temporary, changes in their address. Apart from the evidence of the Medical Register and the *Medical* Directory, personal identification should be required if the slightest doubt arises. Very few men or women would be desirable candidates for any medical post who could not produce proof of their identity from some other member of the medical profession.

To return to the suggestion that medical men should have their finger-prints taken on registration, to be kept in an official record, it may be pointed out that, apart from the objection to maintaining a record only used as yet for criminals, the proceeding would be an act of unnecessary precaution when applied to medical men. In trying a recent case at the Westminster police-court Mr. ROOTH declined at first to receive evidence as to previous convictions of a prisoner based upon finger-print records, which were the only proofs of those convictions. Although it was stated that the prisoner, when confronted with the records of his previous misdeeds, had admitted them, the magistrate insisted that there should be personal identification by witnesses who saw the prisoner on the previous occasions referred to. On a later day, however, he passed sentence without waiting for such additional evidence, after explaining that he had gone into the whole matter personally at Scotland Yard and had satisfied himself that the risk of error was very small, and that a strong *prima facie* case was made out when finger-prints and photographs of the person accused combined to establish identity. None the less, he was right in his intent to look for further evidence in such cases. Finger-prints afford a most valuable, and now indispensable, means of identifying and indexing persons who pass through the hands of the police. But a certain possibility of error on the part of those handling such records exists, even if a similarity of prints cannot conceivably lead to injustice. Personal identification alone is not a safeguard against a miscarriage of justice. The BECK case, for example, showed clearly how personal identification

at any rate by unpractised and perhaps prejudiced witnesses, may err. In practice, also, a judge or magistrate would give weight to a prisoner's strenuous and consistent denial of crimes with which finger-prints alone had connected him, and to any apparently honest alibi. In such a case personal identification can always be invoked, but, as a rule, prisoners are too conscious of their previous delinquencies and of the strength of the evidence of finger-prints to dispute the matter. We do not think that the provision of means of identifying registered medical men by their finger-prints is in the least called for, but we do feel that, where any doubt could arise as to a man's right to the name which he is using, the furnishing of personal identification should be a necessary prelude to any appointment.

Annotations.

"Ne quid nimis."

EPSOM COLLEGE.

THE financial position at the present moment is bearing hardly on all classes; those who are more fortunate in worldly position have many calls upon their purse, and, on the whole, are responding well; the other section of the community are bearing the strain of the increased prices bravely; but the net result is that all charities are appealing for the poorer to persons who themselves are growing poor. This condition of things applies to the medical foundation of Epsom College, for while annual subscriptions have been lost on account of the war and because so many medical men are engaged away from their homes on military duty, on the other side, in addition to the normal calls for assistance, there are an increasing number of dependents of victims of the war who need help. Already the governors have elected as a Foundation scholar the son of a medical officer in the Royal Navy who was killed in action on board H.M.S. *Good Hope*, and there are on the list of candidates the son of a medical officer in the Royal Army Medical Corps who was lost in the *Royal Edward* when she was torpedoed in August, 1916, and the son of a medical officer who was killed last April. From Sir Henry Morris's letter, which appears in another column of this issue, as well as from the statement in our advertising pages, it will be seen that although much effective assistance has already been given the applicants far exceed the number of foundation pensions and scholarships that are available. We have pleaded the cause of Epsom College for so many years that it should not now be necessary to insist upon the duty of every medical man to subscribe to an institution which in the chances and changes of life may be called upon to minister to the needs of many. We hope that every member of the profession, who is able, will either send a donation to, or become a governor of, this necessary and worthy institution.

THE X RAY DIAGNOSIS OF GALL-STONES.

THE difficulties and uncertainty which surround the evidence from X rays in relation to the detection of gall-stones have long been familiar. The character of the stones, their varied translucency, and the vagueness of the shadows they may present have been factors responsible for the undoubted tendency to ignore the possibilities of roentgenology for their detection. However, a strong case has been made for the practical value of these methods by Dr. J. T. Case, of Battle Creek, Michigan, whose experience is almost unrivalled. He states his views and the evidence on which he bases them in a paper, entitled "The Value of the X Ray Examination in Cholelithiasis," in the *Annals of Surgery* for July. He divides gall-stones into three groups: 1. Composed of pure cholesterin; these are quite invisible to X rays. 2. Stones containing a relatively large quantity of lime salts; these are easy to detect. 3. The largest class, made up of stones in which the amount of lime is relatively low. It is the detection of these cases which determines success or failure of the method. A chemical analysis was made for Dr. Case of the lime content of a number of gall-stones. Where the X rays were negative and yet gall-stones were found at operation, the percentage of calcium oxide in relation to the total weight of the stone was 0·30. Among the positive cases—i.e., in the instances where the X ray evidence of the presence of stone was confirmed, but where shadows were most difficult to detect and were seen only upon very careful oblique illumination of the roentgenogram—the lowest proportion of calcium oxide was 0·425 per cent. These examples, doubtless, fall under Class 3. Now Dr. Case found that, in a series of 1000 consecutive bismuth-meal examinations, there were 40 instances of gall-stones; in Cole's series of 500 similar cases, quoted by him, gall-stones were found in 20 cases—the same percentage in each series. The figure 4 per cent. represents roughly the number of positive findings; for autopsy statistics from 19 American and European authors the average frequency of gall-stones is given as 5·9 in 18,892 autopsies. Hesse summarises 17,402 autopsies done in ten years in Petrograd, and finds gall-stones in less than 3 per cent. Dr. Case accepts, however, a generous 10 per cent. of probable gall-stones in his gastro-intestinal and genito-urinary cases combined, and thus finds that positive X ray examination has been gained in roughly 50 per cent. of cases. Similarly, in a series of 5000 consecutive patients examined for suspected disease of the gastro-intestinal tract, lumbar spine, or right kidney (instances in which the region of the gall-bladder would be automatically included) positive findings were made in 4·5 per cent. of the cases. Again, accepting 10 per cent. as possible gall-stones, 45 per cent. of these were demonstrated by X rays. These are, of course, only estimated figures. Accordingly Dr. Case took a series of 300 consecutive abdominal cases operated upon, in which the gall-bladder was examined at the time of operation as well as by X rays beforehand. Gall-stones were found at operation in 41 cases, and of these, 20 had been reported "positive" by X rays; here again, roughly, half of the gall-stones can be detected in this way. X rays are claimed as of value also in gall-bladder disease, in many cases showing right upper quadrant adhesions with fixation and even sometimes the thickened gall-bladder. Finally, the author says:—

> We can therefore conclude that it is definitely possible to show gall-stones in approximately 50 per cent. of the positive cases and to show a gall-bladder lesion in 85 per cent. of cases of gall-bladder disease. ..... Gall-stones are demonstrable with much greater frequency than has until lately been conceded. The frequency with which stones may be shown is so great that I believe the time has arrived when the X ray examination should be required in every suspected case.

DIAPHRAGMATIC HERNIA AS A SEQUELA OF WAR INJURIES.

DIAPHRAGMATIC hernia is not a very uncommon condition, but it has in the past generally been overlooked. With the increasing employment of the fluorescent screen in all obscure abdominal cases the diagnosis is likely to be made more frequently during life. Few cases have as yet been reported as the result of gunshot wounds, possibly because the hernia in case of injury to the diaphragm often does not develop until some time after the injury. Such a case is very completely described by Major L. M. Murray and Major J. D. Morgan in our present issue. The man was completely buried by a shell explosion, and when dug out was unable to stand on account of pain referred to the region of the eighth and ninth dorsal vertebræ. On aspiration of his left chest some blood-stained fluid was obtained, but the hernia was not suspected until after his evacuation to the Canadian special hospital, when metallic tinkling was audible over the left chest. A bismuth meal and X ray examination confirmed the presence of the hernia, the relations of which are admirably shown in the series of X ray prints. Another case has recently been reported by Gustav Ranft,[1] the man dying 16 months after a gunshot wound of the lung. The case is thus described:—

> Within ten weeks after the injury the man seemed to have recovered so completely as to be returned to duty, and, indeed, he served in the field two or three times. In the intervals, however, he was admitted to hospital for gastric catarrh, which seemed of an ordinary kind, and for pain in coughing and sneezing. Eventually bronchitis and pleurisy supervened, from which he died. At the necropsy the lowest third of the left pleural cavity was found to be almost completely filled by bowel tightly distended with liquid fæcal matter. It was the transverse colon, and had penetrated into its unusual situation in the thoracic cavity by means of an opening in the diaphragm large enough to admit two fingers. Dense adhesions bound the intestine to the diaphragm, and round the opening were old scars.

The author concludes that in wounds of the lower thoracic region the possibility of a traumatic diaphragmatic hernia should always be kept in mind. If on further investigation the suspicion is found to be confirmed, the patient should not be pronounced militarily fit, lest, as in this case, serious or even fatal disease of the respiratory organs ensues.

ACUTE ANGIO-NEUROTIC ŒDEMA DUE TO A DOSE OF KHARSIVAN.

OUR knowledge of the possible toxic effects of salvarsan and its substitutes has been acquired only gradually. Why they occur in a few cases and are absent in the majority has not been satisfactorily explained. The suggestions made by Ehrlich and his followers that they are due to administration in unsuitable cases, in which grave organic disease of the nervous or circulatory system is present, or that they are due to errors of technique, have been negatived. There remain only the somewhat unsatisfactory explanations of idiosyncrasy to account for toxic effects following a first dose, and of anaphylaxis to account for the more frequent occurrence of toxic effects after a second dose. In the *Journal of the Royal Naval Medical Service* for October, Surgeon Roderick J. G. Parnell and Temporary Surgeon W. C. P. White have reported a case in which a dose of kharsivan gave rise to a previously undescribed toxic complication—acute angio-neurotic œdema—though an almost identical case had been observed by Staff-Surgeon Paul Fildes.

A stoker, aged 45 years, was admitted to Haslar for primary syphilis. The heart, lungs, urine, and alimentary and nervous systems were normal. On Oct. 29th he was given 0·5 gramme of kharsivan. On the same evening his temperature rose to 99·6° F., and he developed a well-marked Herxheimer reaction. In the morning his temperature was normal and all traces of reaction had disappeared. On Dec. 8th the dose of kharsivan was repeated. During the injection he was somewhat restless, but he made no complaint, and it was presumed that he was merely nervous. Twenty minutes later he became collapsed with an almost imperceptible pulse, face swollen and somewhat cyanosed, and lips and eyelids œdematous. He was unable to speak and very restless. Soon he began to secrete saliva with great freedom, so that paroxysms of distressing cough, due to the saliva passing down his throat, occurred. After about five minutes he could speak in a whisper and complained of pain in the throat, over the heart, and in the pit of the stomach. An intramuscular injection of ether and a hypodermic injection of adrenalin were given. The foot of the bed was raised and a pint of saline solution was injected into the rectum. He gradually improved. He was turned on his side to aid the outflow of saliva from the mouth and the œdema was obviously less 1½ hours after the onset. The buccal mucous membrane was very œdematous. After 3½ hours the salivation and cough were less, but he complained of slight headache and was inclined to sleep.

Staff-Surgeon Fildes's case was as follows:—

> A powerfully built officer who had a large chancre containing *Spirochæta pallida* and a positive Wassermann reaction as the only manifestations of syphilis was given 0·6 gramme of salvarsan. A severe reaction, against which he had been warned in view of his clinical condition and the absence of treatment, followed. He shivered during the night, vomiting and diarrhœa occurred, and next morning a profuse macular syphilitic rash had appeared. On the following morning he returned to duty. Ten days later the dose was repeated without ill-effect. A month later it was repeated again, all signs of syphilis being absent. Within five minutes he had a metallic taste in the mouth. A few minutes later the taste was worse and he complained of pain going down his throat. He was found sitting on the bed with bloodshot eyes and suffused face. The lips, face, and eyelids became swollen, and watery fluid poured from, or was spat from, the mouth. The heart was extremely irregular, weak, and rapid. The voice became progressively weaker until he was unable to speak. He then gradually improved. After about three hours it was possible to observe that the whole buccal cavity and tongue were still markedly œdematous.

Surgeon Parnell and Surgeon White ask why the drug selected the area of the fifth cranial nerve for distribution of the lesions. Laryngeal œdema did not occur. If it had the cases would probably have been fatal.

PELLAGRA IN THE WEST INDIES.

IN 1913 Dr. L. W. Sambon,[1] under instructions of the Colonial Office, visited the British West Indies to investigate a diease, reported to be pellagra, prevalent in some of the islands, and to study the conditions under which the malady was appearing, so that appropriate measures for its prevention might be formulated. Dr. Sambon has prepared a preliminary and a further report, the first dated 1915, and the second 1917. These have now been issued with a prefatory note by the Colonial Office, stating that it was considered undesirable to defer publication, though the report was still incomplete. Dr. Sambon expresses the definite opinion that, though only recently recognised in that region, the disease is an ancient one in the West Indies; he adds that after carefully examining a considerable number of cases, in all stages of the malady, the disease he saw was genuine pellagra, differing in no way from the pellagra seen in Europe and the United States. He

[1] Deutsche medizinische Wochenschrift, 1917, No. 22.

[1] West Indies, Reports on Pellagra in the West Indies, by Dr. Louis W. Sambon M.D. Naples. London: Published by His Majesty's Stationery Office. 1917. Pp. 62. Price 6*d*.

found it associated frequently with other complaints, of which he gives an enumeration, and this association of disorders sometimes rendered the diagnosis difficult. "Pellagra," according to Dr. Sambon, "like leprosy, syphilis, and tertian fever, which have an equally world-wide distribution, is identically the same disease wherever found, whether in Europe, Asia, Africa, America, or Oceania." Discussing the etiology of pellagra and reviewing a mass of evidence, Dr. Sambon concludes that food plays no part in the production of the disease and that maize, sound or unsound, has nothing to do with the causation. The opinion held by some experts in this country and America that pellagra should be classed as a "deficiency" disease due to an ill-balanced and monotonous diet does not receive in the present report the consideration that one might have expected, nor are the human experiments of Goldberger and others in support of it mentioned.[1] Dr. Sambon originated the hypothesis that pellagra is an insect-borne infectious disease, but in his present reports he does not adduce much in support of this view. Probably the evidence in reference to conflicting theories as to the causation of pellagra will appear in an extended report which is foreshadowed.

AN APPEARANCE OF COLOUR SPECTRA TO THE AGED.

AN interesting note on this subject appears in a recent number of *Nature* from that veteran ophthalmologist, Mr. R. Brudenell Carter, founded on personal experience. He finds that he sees rainbow colours surrounding any small light viewed at a distance sufficiently great not to produce contraction of the pupil, and since the condition of his own eyes is, with optical correction, absolutely normal, he attributes the phenomenon to some senile change in the crystalline lens of each eye which does not affect the acuity of vision. The appearance of such spectra is not quite confined to the aged, for a later correspondent in *Nature* recalls an observation of Tyndall's in which an artist was for a time troubled with coloured rings. We think that Mr. Carter is correct in his lenticular interpretation of the phenomenon, while the change may be none other than those non-progressive opacities seen in the periphery of the lenses of many old people, which the late Mr. W. H. H. Jessop used to call "arcus senilis lentis." We do not know, but we make the suggestion to Mr. Carter, who will appreciate it at its worth.

THE report of the Advisory Committee of the Central Control Board (Liquor Traffic), under the chairmanship of Lord D'Abernon, is nearly completed. It deals with the action of alcohol on the human organism, and will be published in the near future as a book and at a price that will make it accessible to the general public. Lord D'Abernon's committee consists of Sir George Newman, Professor A. R. Cushny, F.R.S., Dr. H. H. Dale, F.R.S., Captain M. Greenwood, Major W. McDougall, F.R.S., Major F. W. Mott, F.R.S., Professor C. S. Sherrington, F.R.S., and Dr. W. C. Sullivan, and we may fairly expect from such a body of experts an unbiassed and authoritative statement.

[1] THE LANCET, 1916, i., 93; 1917, i., 27.

Dr. A. J. Rice-Oxley has been re-elected chairman of the Public Health Committee of the council of the Royal borough of Kensington.

OUTBREAKS OF PLAGUE ON S.S. *SARDINIA* AND *MATIANA*, 1917.

BY W. M. WILLOUGHBY, M.D., B.C., D.P.H. CAMB.,
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The Outbreak on the s.s. Sardinia.

THE s.s. *Sardinia*, from Melbourne, *via* Bombay and the Mediterranean, arrived at Gravesend on May 2nd with a crew of 45 Europeans and 129 natives of India and 32 passengers. Five cases of plague had occurred during the voyage. Two natives died on the way up the Channel and were buried at sea, a third died before removal, and two more cases were discovered in the examination of the ship on arrival at Gravesend. The two cases and the corpse were removed to the isolation hospital of the Port Sanitary Authority and the ship was detained at Gravesend. On the following day, May 3rd, a lascar was found to have fever without other symptoms and was removed to hospital; he died of plague on May 8th. A seventh case was taken ill on board on May 6th and died of plague on the 9th. Six of the seven cases were in natives of India and one in a British storekeeper.

The ship's movements were as follows: Left Sydney, Feb. 23rd; Melbourne, Feb. 26th; was at Bombay March 19th to 22nd; thence *via* Aden, Suez, Port Said, and Malta to Marseilles, where a stay from April 13th to 16th was made for discharge of cargo. After further discharge of cargo at Gibraltar on April 22nd the ship arrived in the Channel on April 29th and at Gravesend on May 2nd.

Tabulation of Cases.

	Rating.	Berthing in forecastle.	Date taken ill.	Result.
1	Lascar.	Starboard.	April 27th.	Died Apr. 30th.
2	Coal-trimmer.	Lower.	,, 27th.	,, May 1st.
3	,,	,,	May 1st.	Recovered.
4	Fireman.	Port.	,, 1st.	Died May 2nd.
5	Storekeeper.	Alleyway.	April 28th.	Recovered.
6	Lascar.	Starboard.	May 3 d.	Died May 8th.
7	,,	,,	,, 6th.	,, ,, 9th.

Cases 1, 2, and 4 presented large cervical buboes, Cases 5 and 7 presented femoral buboes, and Case 3 presented an inguinal bubo. Case 6 was a septicæmic one without local lymphatic incidence; from beginning to end the only sign was fever. Films made from the viscera of Cases 4, 6, and 7 at the hospital gave abundant bipolar bacilli. Pus from Case 3 was found by the pathologist to the Local Government Board to be infective on animal experiment.

The British storekeeper, Case 5, gave a straightforward history of onset, being awakened in a shivering fit and finding tenderness in the region of the femoral glands in the early morning of April 28th. None of the cases were pneumonic in type at any stage of their history.

All the cases occurred in the fore part of the ship. The starboard top-gallant forecastle is devoted to deck crew and the port to the firemen and coal-trimmers. Approached from the port forecastle is a 'tween deck quarters appropriated to the coal-trimmers. Cases 1, 6, and 7 were in lascars who berthed close together in the starboard forecastle. Cases 2 and 3, in coal-trimmers occupying the 'tween deck quarters, and Case 4, in a fireman occupying the port forecastle, berthed next the stairway leading to the 'tween decks. The British storekeeper lived in a cabin opening into the starboard forecastle alleyway. It is noteworthy that the native food was kept in a storeroom in the forepeak, approached by a trap and ladder in the floor of the starboard forecastle; also that the natives' galley was situated amidships at the forecastle. The native food-store was quite shut off from direct communication with the holds, being situated ahead of the collision bulkheads.

Rats.

The cargo from Australia consisted largely of wheat, flour, skins, and dried fruits; that from Bombay of pears, lentils, and Acajou nuts: the holds would therefore form an attractive nidus for rats. At Bombay traps were procured on account of the number of rats which had been seen since leaving Australian ports. At Marseilles fumigation of the foreholds with sulphur dioxide took place, the cargo

being *in situ;* the fumigation was carried out by means of the Clayton apparatus. I am informed that it is usual to fumigate holds containing more than 500 tons of cargo destined for Marseilles from an infected port such as Bombay. Three dead rats were thrown out from the carpenter's store-room adjoining the food store and situated in the forepeak soon after the ship left Marseilles. The significance of the dead rats was not noticed at the time; the mortality was ascribed to the Marseilles fumigation, although the rats were found in front of the collision bulkhead where fumes could not have reached them.

The ship left Marseilles on April 16th and the first human case occurred on April 27th. It was said that a sick rat had been seen by some member of the crew soon after leaving Port Said; this history was obtained subsequent to the rousing of considerable interest among the crew in the matter of sick rats. I am, however, inclined to believe that a sick rat, or rats, were seen before Marseilles was reached. The British storekeeper, one of the first cases, issued the native stores, for which purpose he went periodically down into the storeroom, often only in slippered feet. In a former experience of plague in the port the issue of native stores was the duty of the *kasab*, and he alone of the crew was attacked by the disease; he had thrown dead rats out of the storeroom; his bubo was femoral also.

It is probable that infected rats found their way on board at Bombay with the food cargo taken there, and that the infection was more or less confined to the holds until arrival at Marseilles; and that here rats, some of which were infected, gained access to the forecastles and food store, infecting the rat inhabitants already in the forecastle quarters, and themselves taking up their habitation there, where the galleys and the food store formed an ample attraction. The fumigation of the foreholds at Marseilles gives rise to the suspicion that rats may have been even driven to the living quarters; it is a difficult matter to effectively fumigate the holds in the presence of cargo. The hatches were lifted after fumigation at Marseilles and again at Gibraltar. In addition to the possibility thus afforded of infection taking place along the deck, the following structural detail is worthy of notice. The chain lockers on the *Sardinia* are connected to the bilges by a scupper; this is a good exit for rats from the holds in case they are disturbed there. The chain lockers communicated with the lower forecastle by a trap-hatch, which was opened at Bougie and again at Gibraltar to stow chain. The chain locker would form a refuge for rats in case of an incomplete or ineffective fumigation. Two of the cases occurred in the lower forecastle. These facts may have a joint significance. Again, the native food store is ventilated to the extreme forecastle-head by a goose neck; the chain pipes and this goose neck form a path of no difficulty to a rat, from chain locker to food-store. The partial fumigation is thus a possible determining factor in the human outbreak. Theoretically, holds should not be fumigated where infection is suspected without simultaneous fumigation of at least that human accommodation to which access from the holds may be gained by rats.

Preventive Measures.

The measures taken with a view to prevention of spread of plague on board and ashore were as follows:—

The cases were removed to hospital and the whole of the crew and contents of the infected quarters removed for bathing and steam disinfection respectively. While the men were bathing at the disinfecting station their clothes were passed through the Washington Lyon apparatus and their quarters on board fumigated by burning sulphur candles, one pound to the 1000 cubic feet therein. This implied the simultaneous fumigation of the forepeak. The time of exposure to sulphur dioxide was over 15 hours. These measures were calculated to make the living quarters temporarily safe for habitation with respect to rats and fleas.

The passengers were landed forthwith on arrival; their names and addresses were forwarded to the several sanitary authorities at their destinations in accordance with the system of "surveillance" which has superseded quarantine in this country. The crew remained on board under daily observation; if a member of the white crew were permitted to go off the ship for a short period "surveillance" was assured.

Cargo was completely discharged into barges while the ship lay on quarantine grounds and before the fumigation for finally ridding the ship of rats was made. This implied observation of each package passed overside to see that no rat escaped therewith; the mooring ropes of the barges were guarded against escape of rats by way of them. The grain cargo was shot out of sacks overside, flour sacks were scrutinised to prevent possible transfer of a contained rat. Bundles of skins would form a likely nidus; these were watched both on loading and discharge of the barges; a dead rat was found in one of these bundles. As further precaution much of the cargo was stored for 14 days or longer and a watch set on the rat population of the neighbourhood of storage. Goods for transmission to America may require certification either of freedom from infection or of disinfection. Goods stored thus were certified.

The ship-workers were clad in overalls tied in at the ankles and wrists against possible attacks by fleas; all workers were placed under "surveillance" in the way described for passengers. Everybody concerned with the ship was alive to the danger from rats and to the circumspection with which they should be treated whether alive or dead.

On complete discharge the ship was filled by means of the Clayton apparatus with 3 per cent. sulphur dioxide gas.

A single illustration shows the necessity of simultaneous fumigation of crew accommodation and holds.

The cabin situated opposite the insulated meat store in the port alleyway amidships was filled with fumes from No. 4 hold on fumigation of this hold; the store was similarly filled. The connexions between the hold and these rooms were rat runs. Under fumigation of the holds alone rats could be driven into these places and thence into the whole of the adjoining quarters; this would be the more likely to occur if, owing to the presence of cargo or otherwise, the fumigation were rendered inefficient or diffusion slow. Forty-one dead rats were found on search after the fumigation.

The ship arrived late on May 2nd. Case 7 occurred on May 6th and the precautionary fumigation of quarters was made on May 3rd. I am of opinion that nobody was infected after these precautionary measures. Three cases from the starboard forecastle bunked in close proximity to one another suggests the possible direct infection of Cases 6 and 7 through fleas from Case 1 without the intervention of the rat. The point is of interest, as there is the bare possibility of reinfection of the forecastle before the ship was discharged of cargo and finally fumigated. I think, however, this had not occurred.

The measures taken were completely satisfactory: in the result no human or rat infection gained the shore. The ship left the district on May 17th, outward bound.

The Outbreak on the s.s. Matiana.

The s.s. *Matiana* from Bombay *via* the Cape arrived at Gravesend on August 13th last, and nine cases of plague were reported to have occurred since the ship left Delagoa Bay; six of the native crew had died and three were removed convalescent to Denton Hospital. On August 14th a fourth native of India was taken ill and died of plague on August 16th in Denton Hospital.

The ship left Bombay, the port of lading, on June 9th and was at Delagoa Bay from June 26th to July 8th. Cargo was discharged there. As a preliminary to discharge the foreholds Nos. 1 and 2 were "fumigated" by means of cylinders of gas thrown into them.

The list of crew attacked is as follows:—

—	Rating.	Age.	Reported ill.	Bubo.	Result.
1	Saloon boy.	30	July 16.	Axillary and supra-clavicular.	Recovered.
2	Lascar.	19	,, 16.	None.	Died July [illegible]
3	Punkah boy.	22	,, 17.	,,	,, ,, [illegible]
4	Lascar.	20	,, 17.	Right femoral.	,, ,, [illegible]
5	,,	27	,, 17.	Right submaxillary.	Recovered.
6	Coal-trimmer.	20	,, 22.	Left groin and neck.	Died July [illegible]
7	Lascar.	19	,, 24.	None.	,, Aug. [illegible]
8	,,	22	,, 25.	,,	Recovered.
9	Serang.	29	,, 28.	,,	Died Aug. [illegible]
10	Lascar.	—	Aug. 14.	Right axillary.	,,

It is probable that Case 8 who only presented severe bronchitis while in hospital, had not been plague-infected at the time of his illness. Pneumococci were plentiful in his sputum and *B. tuberculosis* and *B. pestis* absent. It will be seen that 17 days separate the first group of 9 cases from the tenth case. All the cases except No. 6 occurred amongst the

part of the crew berthed in the forecastle. The firemen and coal-trimmers were berthed in the 'tween decks amidships on the port side. All the native crew was Mahommedan, and the native galley was situated in the starboard alleyway to the forecastle. The firemen therefore would have dealings with the forecastle and its occupants from time to time, and this association may account for the infection of a single fireman, although, on the other hand, the mortality of rats and its distribution show that the ship from stem to stern was plague-infected in the holds.

The port forecastle, devoted to saloon boys, was only separated from the sailors' quarters in the starboard forecastle by open battening. Six of the 10 cases occurred in the sailors' quarters and only 2 among the saloon boys. The case in the serang, who was lodged in the starboard alleyway in quarters bounded on the one hand by the forecastle and on the other by the native galley, brings the proportion to 7 sailors and 2 saloon boys. The point is a small one, but the list to starboard in case incidence is paralleled by the location of the native food in preparation and storage.

Comparative immunity among the saloon boys may be due to the fact that their meals are partly taken in the saloon quarters and much of their time spent there, away from the forecastle.

Rats and Fumigation.

After 3 deaths, on July 22nd the forecastle was thoroughly cleared of all contents and the crew camped on deck. Ten dead rats were found during this clearance in the forecastle and one in the native food store, which is situated ahead of the collision bulkhead and is without ingress to rats or human being save by a trap in the floor of the starboard forecastle. One of the ten dead rats was found lodged in the bundle of clothing which had belonged to a lascar dead of plague.

Under the direction of Dr. W. L. Mayer, the ship's surgeon, the forecastle was washed down with disinfectant and fumigated, first by means of formalin, then by sulphur burned in liberal quantity. The native clothing and bedding were steamed in a tub. These measures were evidently effective as regards the infection in the forecastle which caused and resulted from the first nine cases.

The occurrence of the tenth case on the day after arrival in the Thames showed, however, that infection was still present on the ship up to the time of arrival. Smears taken after death from this case gave abundant bipolar bacilli, confirming the diagnosis of the epidemic, which, however, was not in doubt in view of the abundant clinical and historical evidences.

The cargo consisted largely of oil seed and myrobalans, attractive to rats and shipped at Bombay.

During the homeward voyage 42 rats had been trapped, in addition to those found dead in the forecastle. In the discharge of the cargo in Gravesend Reach 77 dead rats, mostly of the *Mus rattus* (black rat) denomination, were found. *Mus decumanus*, however, existed on board; a specimen was trapped and examined for plague at the hospital with negative results.

A rat plague infection of the holds must, on the facts, be assumed to have occurred at Bombay. It was a month after leaving Bombay and a week after leaving Delagoa Bay that the first human case occurred.

At Delagoa Bay a fumigation of the forehold was attempted in the presence of cargo, and the distribution of the rat mortality in the holds as disclosed on the discharge of cargo at Gravesend is as follows:—

Hold No. 1, 5; No. 2, 9; No. 3, 34; No. 4, 29.

Why this paucity of dead rats in Nos. 1 and 2, the "fumigated" holds, as compared with Nos. 3 and 4, the unfumigated?

The suspicion is very strong that in this fumigation rats were evicted from holds Nos. 1 and 2 rather than killed, and that, as suggested in the case of the *Sardinia*, these took up their quarters in the forecastle, which afforded cover and food.

The details of the measures taken at Gravesend are the same as in the case of the *Sardinia*, save that the barges were only permitted to lie alongside during actual work, and no debagging was considered necessary except from sacks which on scrutiny were found holed so as to permit entrance, and thus transfer, of a rat.

No human infection took place on board after the preliminary fumigation at Gravesend, and I believe no infection reached the shore except in the removals to the disinfecting station and hospital.

Remarks.

Plague-infected ships are rare arrivals in the Thames. It is significant that two outbreaks in quick succession should have appeared, and both in ships in which partial fumigation had been carried out. If, as I assume, there is a direct connexion between these partial fumigations and the human outbreaks, two points of great importance arise.

First, the ship's structure and possible paths of communication for rats must be closely investigated in connexion with any partial fumigation of a ship and the necessary protection against invasion of living quarters by rats arranged for. No fumigation of holds should be attempted without simultaneous fumigation of living quarters to which a possible path of escape for rats exists.

Secondly, had the human cases not occurred, would the rat infection existing on the ships have been disclosed at the moment for most effective action? Rat infections do pursue their course in undisturbed holds both with and without eventual recognition of the fact of their occurrence.

In practice the present safeguard against the landing of infected rats which may exist on ships from infected ports is the power of port sanitary authorities to put questions and make examinations concerning rat mortality and sick rats. The time for putting the questions is necessarily protracted over the whole period from the ship's arrival to completion of discharge of cargo, and in the absence of repetition of the questions from day to day a discovery of importance may not be disclosed at the proper time for effective action, if at all.

As an additional safeguard it seems desirable that the duty of ascertaining as far as possible the state of the ship with regard to rats both on the voyage and during discharge of cargo, and of immediate notification to the port sanitary authorities of sick or dead rats found, be imposed on owners and officers or other persons in charge of ships as part of the Orders of the Local Government Board relating to plague.

Greenwich.

THE PROPOSED MIDWIVES BILL FOR IRELAND.

A BILL to secure the better training of midwives in Ireland and to regulate their practice was introduced in the House of Commons on Nov. 12th by Mr. Duke, the Chief Secretary for Ireland, and ordered to be printed. It is briefly known as the Midwives (Ireland) Bill, 1917, contains 29 clauses, and closely follows the lines of the Midwives (Scotland) Act of 1915, which was itself modelled on the English Act of 1902 with certain alterations and additions resulting from the experience gained in the administration of the English Act during a period of more than 12 years.

It will be of help to our readers to note the provisions which appear in the Irish Bill but not in the English Act nor (unless so specified) in the Scottish Act.

Clause 2 (1) (b) and (c), and (2).—A claim for the Irish certificate may be made within two years from the commencement of the Irish Act by a woman who holds a certificate in midwifery granted after training and examination by any lying-in hospital recognised as a training school for midwives by the Local Government Board, or by a woman who has been a permanent midwife of a workhouse or a dispensary district in Ireland.

Clause 3 (1), (2), and (3).—The Central Midwives Board for Ireland is to consist of thirteen persons, of whom eight are to be registered medical practitioners, four are to be appointed by the Local Government Board (two of whom are to represent the County and County Borough Councils), and one is to be a certified midwife appointed by the Lord President of the Council. As in the Scottish Act, the members of the Board are to be paid in respect of their attendance reasonable expenses on a scale approved by the Privy Council.

Clause 6 (1) (a) and (b).—The Board is authorised to suspend a midwife from practice in lieu of removing her name from the roll, and the local supervising authority is authorised to suspend from practice, until the case has been decided, a midwife against whom a prosecution has been taken for a contravention of any of the provisions of the Bill. (In the Scottish Act.)

Clause 6 (2).—The local supervising authority is authorised in certain cases to pay reasonable compensation for loss of practice to a midwife who has been suspended. (In the Scottish Act.)

Clause 7 (1), (2), and (3).—The Board is authorised to pay all or any part of the expenses incurred by a midwife who may be required to appear before them in her own defence. All forms and books which midwives are required to fill up or use are to be supplied free of charge by the local supervising authority or the Board. (In the Scottish Act.)

Clause 8.—Where the name of a midwife has been removed from the roll the Board may prohibit her from attending women in childbirth in any other capacity. (In the Scottish Act.)

Clause 9.—Where a midwife's name has been removed from the roll she must within 14 days after notification thereof surrender her certificate to the Board under a penalty not exceeding £5. (In the Scottish Act.)

Clause 10.—A notice of the removal from the roll of the name of a midwife is to be given to the Local Government Board as well as to the local supervising authority.

Clause 11.—Provision is made for admission to the roll on reciprocal terms of a woman trained and certified after examination as a midwife in any other part of H.M. Dominions where there is an Act or Ordinance for the certification and registration of midwives under a public authority. (In the Scottish Act.)

Clause 12.—A woman whose name has been removed from the roll may appeal within three months to the High Court or to the Local Government Board. In England the appeal is to the High Court only, and in Scotland to the Court of Session only. It is hardly conceivable that the Local Government Board should be given coördinate jurisdiction with the High Court either in England or in Scotland, where the powers of the Judicature and of the Executive Government are not alternative.

Clause 13.—The Board's accounts are to be audited by an auditor appointed by the Local Government Board. In the English Act the Board appoints its own auditor, and in the Scottish Act the auditor is appointed by the Secretary for Scotland. Precepts for payment of the deficiency may be issued to the local supervising authorities in proportion to the rateable value of their districts. In England the precepts are levied in proportion to the number of midwives who have given notice during the year of intention to practise within the various areas, and in Scotland the precepts are to be in proportion to the populations of the various districts.

Clause 17.—For the purpose of exercising the powers of supervision over midwives, powers of entry at reasonable times and on certain conditions are given to the local supervising authority in respect of premises believed to be a lying-in home conducted for profit. (In the Scottish Act.)

Clause 21.—Power is given to local supervising authorities to contribute towards the training of midwives within or without their respective areas. (In the Scottish Act.)

Clause 22.—Provision is made for the payment by the local supervising authority of fees on a scale to be fixed by the Local Government Board to medical practitioners called in to the assistance of a midwife under certain conditions. (In the Scottish Act.)

Clause 23.—County councils may appoint a registered medical practitioner with qualifications to be approved by the Local Government Board to be their medical officer for the purposes of the Bill, and in a county borough the medical superintendent officer of health shall be the medical officer for the purposes of the Bill.

Clause 29.—This clause contains a curious misprint showing that the bulk of the Bill has been copied verbatim from the Scottish Act, and provides that the Act may be cited as the Midwives (Ireland) Act, 1915—an obvious error for 1918.

Comparing the Irish Bill with the Scottish Act, from which it is taken, it will be observed that the chief difference consists in the much larger powers given to the Local Government Board in Ireland. This is no doubt due to local conditions, which are in many respects quite different from those obtaining in England or Scotland. The name "Local Government Board" does not appear in the English Act at all, and in the Scottish Act it is found only in Sections 22 and 23 dealing respectively with the scale of fees to be prescribed for the payment of medical assistance in cases of emergency, and the annual report of the medical officer of every local supervising authority which is to be sent to the Local Government Board. Clause 12 contains a principle open to grave objection, and its amendment, limiting jurisdiction to the High Court only, is suggested as a wiser course. There is no clause in the Irish Bill or Scottish Act authorising a county council to delegate its powers to any district council within its area, as in the English Act. The Bill provides that the rules regulating the practice of midwives shall be communicated to the General Medical Council for its observations before they are officially approved by the Privy Council. It is proposed that the measure shall come into operation on Jan. 1st, 1918.

MANUFACTURE OF DRUGS IN INDIA.—Writing on the conditions in the Madras Medical Stores, perhaps the largest of its kind in India, the *Madras Mail* remarks that the mistaken economy in medical matters which led to the breakdown in Mesopotamia is exemplified in the case of such stores. At present, in addition to meeting the ordinary requirements of the Presidency, the superintendent has to supply drugs to the numerous special hospitals and convalescent depôts in the country. Owing to the embargo on freight, he has been obliged also to break new ground in the direction of manufacturing in the country drugs which until lately used to be imported. Careful inquiry has been undertaken into the possibilities of growing in India various medicinal plants, and search is being instituted for mineral substances used in the manufacture of drugs. Madras hopes to be able to make its own disinfectants, more especially of the phenol group, and also starch from rice. The possibilities of making glycerine are also being investigated.

Correspondence.

"Audi alteram partem."

EPSOM COLLEGE.

To the Editor of THE LANCET.

SIR,—I would again ask you to allow me to make an earnest appeal to your readers for contributions to the Royal Medical Foundation of Epsom College. This Foundation provides an education of the highest class, together with maintenance, clothing, and pocket money, for 50 necessitous sons of medical men, and gives pensions of £30 each to 50 aged members, or widows of members of the medical profession in reduced circumstances. In order to maintain the full numbers of beneficiaries a sum of about £4500 must be obtained by annual contributions.

I appeal to all medical men as well as to members of their families who do not already contribute regularly, to assist the Council at this particularly difficult time by becoming annual subscribers. In the case of those who do subscribe, I earnestly request them to increase if possible their regular contribution during the period of the war, and subsequently for two or three years at least. An increased number of applications is sure to be received as a consequence of the war. Already the governors have elected as a Foundation Scholar the son of a medical officer who was killed in action on board H.M.S. *Good Hope;* and there are at this time on the list of candidates the son of a medical man who was lost in the *Royal Edward*, when she was torpedoed in August, 1916, and the son of another medical officer who was killed whilst in command of a battery in France last April.

I am, Sir, yours faithfully,

HENRY MORRIS.
Honorary Treasurer of Epsom College and its Royal Medical Foundation.

8, Cavendish-square, London, W., Nov. 27th, 1917.

THE THEORY OF "BACK PRESSURE" AS A CONSEQUENCE AND AS A CAUSE OF HEART FAILURE.

To the Editor of THE LANCET.

SIR,—There come periods when newer acquisitions are apt to engross the attention to the prejudice of older possessions, and among the latter I would instance the doctrine of "back pressure" in its relation to heart failure; this of late has been called in question for reasons which, to me, appear to be more than inconclusive.

Heart failure declares itself when under the normal conditions of life an effective circulation ceases to be maintained.

The object of this letter is to consider one particular form of heart failure—namely, that caused by valvular disease; to take note of the phenomena of back pressure as these are developed by the central impediment; to find in these phenomena both an expression of heart failure and a measure of its degree; and, finally, to show how back pressure reacts upon the heart muscle itself, impairing its functional activity, and thus augmenting the cardiac incompetence. In this last respect it is claimed that back pressure, itself a *consequence* of heart failure, becomes secondarily an actual *cause* of heart failure.

I. *Back pressure as a consequence of heart failure from valvular disease.*—Let us take as an example of this disease the button-hole mitral. The result of the thickening and fusion of the valve segments is that a resistance is interposed in the course of the circulation of the blood through the chambers of the heart. This resistance works by the development of a reactive pressure which, by preventing the forward delivery of the blood, leads to the accumulation of blood behind the obstruction. The effect of this accumulated (residual) blood is first felt by the heart itself as a distending force, but in the course of things as it outsteps certain reserve powers of the heart, termed compensatory, it is projected backwards into the great systemic veins and is felt ultimately in the farthest venules and in the capillaries themselves. For brevity's sake I have not followed the effects of the button-hole mitral through the lesser circulation; it is unnecessary. This is back pressure; its cause

is the central impediment; its working is as retrograde as the flight of the Parthian arrow: is it not well named?

To see the above-named effects as *pressure* effects, it will be simplest to observe the sequence of events which arises when a vein is tied or otherwise obstructed. What happens? The movement of the blood in the veins is stayed at the obstruction and that portion of the *vis a tergo*, which until that moment had been expending itself, first, in developing the liquid momentum of the flowing blood, secondly, in overcoming the surface resistance of the vessel walls, now, as the blood comes to a standstill, appears as a distending force and the vein swells immediately behind the block. This process repeats itself, as, successively, the oncoming blood is held up, until the venules and capillaries are reached. If the distending force is able to push past the obstruction, well and good; if it cannot the rise of pressure and distension go on increasing until a maximum[1] is reached and the *vis a tergo* is counterbalanced by the stretch of the tissues. Under the raised pressure the capillaries, in particular, ooze in excess of the drainage capacity of the lymphatics, and the part becomes more or less water-logged. In this area of engorgement, of stasis, of high blood pressure and of exudation (œdema), the functions of the part are brought more or less to a standstill and disintegration preponderates, completing the picture of relative death occasioned by the block.[2] Fortunately for the part there are few if any closed vascular circuits, in the sense of being quite shut off from neighbouring areas; in the vast majority there are collateral channels which interconnect more or less freely. These anastomotic channels constitute a reserve mechanism which safeguards the vitality of the blocked area by relieving the congestion therein and gradually re-establishing the circulation. The operation beginning at the periphery proceeds centrally, and we may note that it is the raised blood pressure, itself a secondary effect of the venous obstruction, which now comes to the rescue and opens up the collateral vessels.[3] Incidentally, we may note that this raised blood pressure is not always so intelligently directed, for whilst it always tends to open up the collateral paths it also tends at the same time to force the blockade, and sometimes with success, as in the case of thrombosis. But the local relief thus secured is at the imminent peril of the whole, since the potentiality for evil of the embolus is of far greater moment than the local congestion. But this is by the way. After such manner does the venous obstruction work, and it matters not how small or how large is the vein involved the process is always the same—viz., by the backward projection of a raised intravenous pressure.

To come back now to the obstruction placed centrally in the heart, again the *modus operandi* is exactly the same, and under its influence the right heart and the whole systemic venous system tend to become congested and stagnant. As a preliminary to this (the block being at the mitral orifice) there will be the congestion of the veins, capillaries, and arteries of the pulmonary circulation, in particular of the hinder and lower parts of this circuit. In one respect, however, an important difference obtains between the effects of the block in the vein and the block at the heart, for whereas in the former, even though the obstruction be in the inferior or superior cava, anastomosis always gives local relief, more or less, in the latter, anastomosis cannot serve, since the whole venous system is involved. There is one exception to this statement: it holds when the cardiac obstruction arises in fœtal life, before the completion of the interventricular and interauricular septa; in that case a kind of anastomosis is secured by the prevention of the completion of the septa and by the maintenance of the patency of certain fœtal channels. By these means life may be made possible though upon a lower level.

I am unable to quote figures as to the exact values of the intravenous pressures in heart failure from valvular disease. In health physiologists put the pressure in the large veins at the root of the neck at 0 to minus 0·8 mm. Hg[4]; in disease, in the absence of precise records, we may, I think, assume safely that the pressure is always raised whenever there is fullness of the veins at the root of the neck—e.g., a distended external jugular; for if there were the smallest negative pressure at the outflow of the external jugular, or even a zero pressure there, the blood could not be dammed back so as to distend the external jugular and lift the skin over the vein; there must be a positive pressure in the vein to do this. The distended external jugular will therefore always indicate a plus intrathoracic venous pressure unless there be evidence of local compression of the vein.

II. *Back pressure as a cause of heart failure.*—In the ordinary way we do not speak of back pressure as the cause of heart failure, but as its expression or consequence and in the main this is its most important aspect; now, however, we are to consider how it may be a definite cause of cardiac incompetence. The first roots of the systemic venous system are constituted by the coronary sinus and the coronary veins which open into it, and when back pressure develops as a result of cardiac obstruction these veins will, in a sense, be the first to feel the effects of back pressure, the first to suffer from the general venous stasis. But we have seen that vascular stasis involves a lowering of the vitality of the congested tissues, this can hardly be called in question, consequently the heart muscle, impaired in its nutrition, must suffer in its driving-power, and therewith another form of heart failure adds itself to the pre-existing failure from *mechanical obstruction*. We have here a good example of the vicious circle, so-called.

It is strange that a modern school of cardiologists would restrict the essential cause of heart failure to a functional impairment of the heart muscle; this is about as reasonable as to say that bowel failure can only result from functional impairment of the intestinal musculature, whereas we know that a mechanical obstruction—e.g., a strangulation—of the intestine or an impacted fæcal mass may defy the most healthy and vigorous peristalsis, threatening death unless the obstruction be removed. Here the failure is as mechanical as is its relief. True, a paralysis of the bowel may bring about a failure as complete and as fatal in the absence of all mechanical obstruction, but this is no argument against the other variety of bowel failure.

In the foregoing the obstructing valve has received chief attention, but the leaking valve leads to exactly the same results, for the regurgitation develops a reactive pressure as effective as the simple passive resistance of a narrowed orifice in holding up the circulation.

In conclusion, it must be said that however much modern advances in cardiology may have in store for us, they have not so enriched us up to the present that we can afford to forgo those older standards which have stood the test of time. Amongst these standards we must place those back-pressure effects with which we are all familiar; and we must insist that to belittle their significance is not in accordance with clinical experience, that *argumentum ad ægrotantem*, which, in dealing with the sick man, his griefs, their cure or their relief, must ever speak the final word.

I am, Sir, yours faithfully,

HARRINGTON SAINSBURY.

Wimpole-street, W., Nov. 21st, 1917.

[1] According to Halliburton, the complete closure of the veins leading from a capillary area may quadruple the capillary pressure (Physiology, edition 1917, p. 273); this pressure, since we are now dealing with a problem in hydrostatics, should represent the venous pressure also.

[2] Dr. Charles Bolton (Observations on the Pathology of Cardiac Dropsy, Oliver Sharpey Lectures, 1917) attributes the chief part of the œdema to the disintegration of the capillary wall.

[3] With the re-establishment of the circulation the raised blood pressure, of course, falls. Cf. the experiments of C. Bolton, loc. cit.

[4] Starling: Physiology, edition 1915, p. 817.

THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 24th two important matters were dealt with.

(1) In Professor Sims Woodhead's and Mr. Varrier-Jones's article a statement was made, to which you referred in your leading article, on which I should like some further evidence.

"It is stated on very good authority that the results of sanatorium treatment vary according to the class of person treated, and that amongst the well-to-do the results of treatment are three times as good as are those obtained with the working men."

I should be very glad if the facts or statistics could be published on which this statement was founded, as it certainly does not accord with my general impression and is absolutely contradicted by the Australian Commission's figures, published in a recent number of your journal, where it was shown that in Australia 222 per 100.000 persons of independent means died from tubercle in 1911, as against only

200 per 100,000 among miners, the highest death-rate among the working-class, and only 36 per 100,000 amongst dependents. A statement so far-reaching and important as that the rich recover easier demands very accurate proof.

(2) Concerning Dr. Louis Cobbett's letter *re* Success and Failure in the Treatment of Tuberculosis. While quite agreeing with him that the time has not yet arrived for the general use of prophylactic injection, and believing, as he does, that it must rest entirely on its own foundations, there are, in addition to the points he has suggested, two further points which at the present time give one a hope that it may be a definite remedial procedure. The first is, so far as I have been able to observe, that lupus tissue which has been attacked and has recovered seems to be immune from further invasion, the invasion always occurring at the free edge of the disease. Secondly, the application of tuberculin to the infected conjunctiva in repeated doses, at least in my hands, has produced such a condition of resistance that ulceration, or breaking down, though frequent previously, does not recur. Freedom from relapse has been demonstrated practically in all cases tested, most of them for a period of over two years.

I am, Sir, yours faithfully,

Middlesbrough, Nov. 27th, 1917. HENRY A. ELLIS.

HYSTERICAL DEAFNESS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—The questions raised in the interesting paper by Major A. F. Hurst and Captain E. A. Peters in THE LANCET of Oct. 6th are of the greatest importance. It is certain that many applications for compensation will be made by soldiers who claim that their hearing has been injured or destroyed by the explosion of mines, shells, or hand grenades, or by prolonged gun-fire. There may be great difficulty in adjusting these claims as the hearing power of recruits has not been systematically examined. Thousands of men suffering from deafness—with or without otorrhœa—have been admitted to the Army. Sohier Bryant[1] gives some startling figures regarding the number of "ear" cases in the various zones of the French Army.

Major Hurst and Captain Peters state that organic disease or injury of the ear of sufficient intensity to produce severe cochlear deafness is invariably accompanied by loss of vestibular reaction. They apparently apply this law not only to cases of shell deafness but also to those of neuro-labyrinthitis due to epidemic cerebro-spinal meningitis. The logical conclusion is that if, in testing a case of shell deafness, or neuro-labyrinthitis we find that the vestibular reactions to the rotation and caloric tests are normal, we may conclude that the deafness is either hysterical or malingered. If this is really true it immensely simplifies the work of otologists in examining such cases. I, however, agree with Dr. P. McBride in thinking that we must hesitate a little before accepting this delightfully simple test as a reliable one for the purpose of excluding organic injury or disease of the sound-perceiving apparatus. It is a pity that Major Hurst and Captain Peters do not give an account of any cases of "explosion" injury of the ear in which they have found loss of the vestibular reaction.

We must confess that as yet we do not know the exact pathology of "shell" or "explosion" deafness. We can, of course, observe ruptures of the tympanic membrane when these are present, but we know that such ruptures, even when associated with hæmorrhage into the middle ear spaces, will not account for the marked or absolute deafness met with in cases of severe shell deafness. There are three other changes which may account for the condition: (1) Rupture of, or hæmorrhage into, the membranous labyrinth; (2) hæmorrhage into, or rupture of, the cochlear nerve or some of its fibres in the internal auditory meatus; and (3) degenerative neuritis of the nerve structures of the cochlear apparatus—i.e., Corti's organ, spiral ganglion cells, &c. In a paper on this subject at present appearing in the *Journal of Laryngology* (in conjunction with Captain John Fraser, R.A.M.C.) I have shown that, out of four cases of explosion injury of the ear microscopically examined, (1) rupture of the delicate neuro-epithelial sacs and tubes of the membranous labyrinth was not found in any case. (2) Hæmorrhage into the cochlear nerve at the fundus of the internal meatus was present in three out of four cases. Such a lesion is quite capable of producing deafness. In one case there was a large plug of wax in the external meatus which seems to have protected the structures of the middle and inner ear from injury.) (3) An early stage of degenerative neuritis was probably present in one case in which the injury was due to the explosion of a hand grenade close to a soldier. (Microscopic examination of a case of shell deafness which dies from other causes some months or years after the onset of the deafness would give more reliable results as to the presence or absence of degenerative necrosis. From these rather meagre observations we may at least state that there is some pathological basis for explosion deafness. I must, however, admit that, as all the cases examined by Captain Fraser and myself were admitted to the casualty clearing station in a state of profound shock and died shortly after admission, no vestibular or cochlear tests were carried out.

I can, however, bring forward the case of a congenital deaf-mute in which microscopical examination of both inner ears showed that Corti's organ in all coils was so malformed that hearing was almost abolished, while the vestibular structures were normal. The caloric reaction was tested on both sides some days before the death of the patient and a normal response was obtained. Another case which throws some light on this subject was that of a patient who had suffered from chronic middle-ear suppuration and absolute deafness on one side for many years before death. (The vestibular reactions unfortunately were not tested as the case came under observation before such examinations became a routine part of otological work.) Microscopic examination of the labyrinth showed complete obliteration of the whole cochlea by new bone formation and atrophy of the cochlear nerve. The structures of the vestibule and semicircular canals along with the vestibular nerve, on the other hand, were comparatively well preserved. These two cases show that the function of the cochlea may be entirely lost while the vestibular apparatus is normal (Case 1) or shows but slight alteration on microscopic examination (Case 2). Those who have had experience in carrying out the functional tests of the cochlear and vestibular apparatus in cases of otosclerosis will have come across instances in which the patient is extremely deaf (mixed middle and inner ear deafness), whereas the vestibular apparatus responds normally to the rotation and caloric tests (Fraser and Walker[2]). These observations show that the cochlear apparatus is not always normal when the vestibular apparatus responds to the caloric test.

Professor A. A. Gray has shown[3] that in the evolution in the animal kingdom the vestibular apparatus appeared long before the cochlear apparatus. The former is present and fully developed in the lower fishes, whereas the cochlea only begins to appear in the reptiles and amphibians and reaches its full development in the higher mammals. It is usually admitted that organs such as the vestibular apparatus which appear earlier in the scale of evolution have greater resisting powers or greater powers of recovery than those which, like the cochlear apparatus, are developed at a considerably later period. I know that your correspondent Dr. Dan McKenzie does not agree with this view.

Let us, however, look at the matter from the point of view of ordinary anatomy and physiology. There are two movable areas in the rigid bony capsule which surrounds the labyrinth. These areas—the oval and round windows—are situated in the party wall which separates the middle from the inner ear. The former—the oval window—communicates with the perilymph space of the vestibule just at the point where the scala tympani of the cochlea begins. The latter—the round window—lies at the other end of the perilymph space of the cochlea. As the labyrinth capsule is rigid and as fluid is incompressible we must conclude that movements of the perilymph, produced by vibration of the stapes in the oval window, can only occur in that area which lies between the two movable windows. It would seem therefore that a "blow" to the ear caused by a sudden great movement of the atmosphere following an explosion is transmitted to the oval window and can only affect the column of fluid in the cochlea. This helps to explain the greater vulnerability of the cochlear apparatus. We must, however, admit that a very violent explosion close to a soldier can shatter the skull including the temporal bone. The "rigidity" of the labyrinth capsule is therefore only a relative term.

[1] Journal of Laryngology, Rhinology, and Otology, November, 1917, p. 338.

[2] Journal of Laryngology, November, 1914, p. 519.

[3] Otosclerosis, Lewis and Co., London, 1917, p. 56.

do not deny that there are many cases of hysterical ifness following shell explosion or prolonged gun-fire. jor Hurst and Captain Peters have given us two very eresting instances of this condition. What I do deny is t we can accept without further consideration the law l down by these writers that the presence of normal tibular reactions excludes the possibility of serious injury he cochlear apparatus.

Ve must conclude that, while it is very difficult for Major rst and Captain Peters to prove their contention, it is by means easy to show that they are wrong.

I am, Sir, yours faithfully,

linburgh, Nov. 26th, 1917. J. S. FRASER.

ROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

IR,—I am not sure that I understand Sir Bryan Donkin's er in your issue of Nov. 24th. I did not imply, at any I did not mean to imply, that calomel cream, if used in icient strength (30 per cent.), is not effective as a pro-lactic in syphilis. As a fact it is efficacious even hours ir actual inoculation. Since it is a germicide, it is bably effective also against gonorrhœa if it be used before cocci have entered the urethra. I merely insisted that antiseptic, quickly used, is equally efficacious. Sir an Donkin questions whether permanganate of potash ild prevent syphilis if abrasions were present on the is. I can only answer that when permanganate was used a single case of venereal disease occurred during many ths among some thousands of men dwelling in a com-nity where venereal disease was rife. I presume, even n abrasions are present micro-organisms do not instantly below the surface. I am not alone in my experience, am I the first to use this method. Since writing to LANCET I have learned that some years ago a surgeon, had care of a large body of men in one of our endencies, provided his charges with pill-boxes con-ing permanganate in crystals and with instructions o use. Thereafter he also saw not a single fresh case of ereal disease. I do not think either of us is entitled redit, except in so far as we had the courage of our victions. It is obviously the correct procedure, when so ited and accessible a part of the body as the penis has n exposed to infection, to disinfect at once—to practise inary surgical cleanliness. Again, it is obviously right n the moral standpoint to prevent disease (i.e., poison-), especially when the innocent suffer with the guilty.

he point I especially wished to make is this: Calomel am is not the only nor, as far as I am able to judge, the st universally useful means of prophylaxis. It is seldom and. I do not know to what extent it has prevented ase among controlled bodies of men. I am sure it has next to no prophylactic influence among the general lic. Men do not seek medical advice before going into ger, nor afterwards till too late. On the other hand, manganate or some other antiseptic is found in half the es of England. Its use is universally understood. If ere known that simple sponging with a solution of it vented venereal disease the knowledge would quickly ead. We might hope, if not entirely to abolish venereal ase, to make it as rare as typhus or typhoid, and by the e means—suitable sanitation. Legislation, so hard to ain and so ineffective when obtained, would be un-essary. I am, Sir, yours faithfully,

uthsea, Nov. 25th, 1917. G. ARCHDALL REID.

CCESS AND FAILURE IN THE TREAT-MENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

IR,—I am much indebted to Dr. Louis Cobbett for his ellent and pertinent criticism of my views as to the hods of dealing with the tuberculosis problem, in your e of Nov. 24th. Before taking his criticisms in order I ild like him clearly to understand that I desire to use and every means both to prevent tubercle bacilli obtain-access to the human and the bovine body, and, if they btain access, to make sure that the seed falls on stony and, and that the tissues of the body are able to destroy Dr. Cobbett accuses me of ignoring the nature of the case. If I do not understand the nature of the case I ought to, having recently read his excellent book on the problem. He instances the special methods of dealing with diseases such as malaria and bubonic plague, where the infection is transmitted by animals which can be killed whether they are infected or not. He is quite right. The animals which transmit tuberculosis and pneumonic plague cannot be exterminated, but I do not ignore that any more than he does. These instances only emphasise the special difficulty of preventing individuals, human and bovine, from being infected.

In his book Dr. Cobbett insists on the importance of the size of the dose of bacilli, which gain access to the host, in producing disease, and also on the virulence of the infection. In all animal experiments the test of immunity is the capacity to withstand the inoculation of large doses of bacilli which are virulent for the particular animal—viz., of bovine bacilli for the ox and the rabbit and of both human and bovine for the guinea-pig. Now, I am quite aware that complete immunity has never been produced against the tubercle bacillus by inoculations of tuberculins of various sorts, but relative immunity has. Just as relative immunity has been produced in human beings against the entericas, bubonic plague, and many other diseases, but not absolute immunity; for instance, the relative immunity which is generally effective against bubonic plague is quite useless against the overwhelming infection of pneumonic plague. I do not think any method of inoculation with tuberculin will be effective against an overwhelming infection of tubercle bacilli in man, but fortunately cases of overwhelming infection are relatively few. The comparatively great protection to bovine bacilli produced in oxen by inoculation with living human bacilli encourages one to hope that an equally effective dead antigen is not beyond the bounds of possibility. It was just the ineffectiveness of the ordinary tubercular antigens that induced me to try for a better one; hence the benzoyl-chloride solution. Let me state my position with regard to the human problem again. For practical purposes it may be assumed that while everyone gets infected with tubercle bacilli only a small percentage develop disease from this infection. Presumably—I think a justifiable presumption—the majority do not develop the disease because their resistance is normal. If the resistance of those who would develop the disease could be made and kept normal the problem would be solved, for only those who got an overwhelming infection would develop the disease. I think there is reasonable hope of producing this relative degree of immunity with the benzoyl-chloride solution or other preparation of the tubercle bacillus, for I know that I can produce a sufficient degree of immunity in chronic pure infections of the tubercle bacillus, so that the patient completely and permanently recovers from his disease. I know, too, that this benzoyl-chloride solution produces its effects in very small doses. I have produced distinct focal and general reactions in pulmonary tuberculosis with a dose of 0·00000005 mg. The initial dose for these cases must not be larger than 0 0000001 mg. The highest dose that need usually be attained is 0 01 mg., while frequently 0 001 mg. is quite sufficient. So that if reactions are any criteria this antigen is much the most powerful ever produced. Further, I know that I can with precision restore delicate members of tubercular families, who are showing no physical or X ray signs of the disease, to ordinary vigorous health with this preparation. Have I not then some presumptive evidence that the benzoyl-chloride solution is a powerful and efficient antigen, and that it gives a reasonable hope of putting up a subnormal resistance to normal? I have done practically no animal experiments with the preparation. I would be exceedingly obliged to Dr. Cobbett if he would help me in this direction.

I quite see the great difficulty of proving absolutely the efficacy of preventive inoculation. The only proof that would satisfy myself would be the reduction of case incidence and mortality. In order to do this the trial would have to be large and prolonged. What arguments can be used to persuade those who have been exposed to virulent infection or have inherited a low resistance, such as members of tubercular families, to undergo the process? First, it can do them no harm, for it can be performed safely in those who are already infected. Secondly, it gives them a fair chance of making sure that their resistance is normal, so that they will be able to overcome an infection. Thirdly, if

they have got an active infection it will discover it, by the development of general or focal reactions or both, in its early stages when it can be certainly cured and with comparative ease. I should, of course, like to have compulsory preventive inoculation, but I quite realise that it is not practical politics at present.

Let me take now the prophylactic measures which Dr. Cobbett considers will be effective.

1. The amelioration of the conditions of life of the poor. The figures of the tuberculosis mortality of the Dublin registration area for 1915 will throw some light on this point. They are:—

Professional and independent classes	1·84 per 1000.
Middle class	2·18 ,,
Artisan and petty shopkeepers...	3·11 ,,
General service class	3·61 ,,

These figures clearly show that improvement of hygienic surroundings will not solve the problem, for have not the professional and middle class sufficiently good surroundings?

2. The cure of early cases. If he means by early cases cases giving physical signs in a part of a lobe and with tubercle bacilli in their sputum, I think I am right in saying that by sanatorium methods of treatment, the only generally recognised methods, the large majority do not lose their tubercle bacilli and are therefore not cured. If he means cases with no tubercle bacilli how is he going to diagnose them? By tuberculin reactions?

3. The isolation of those who are acting as sources of infection. I quite agree with him. This will have to be done. I would like to know from him how many beds will have to be provided in Great Britain; at least 20,000 beds will have to be provided in Ireland.

Two questions to Dr. Cobbett and I have finished this unavoidably lengthy letter. Does he think he can by isolation cut off entirely the sources of infection? If not, does he not think my proposal to supplement this measure by an attempt to produce a normal resistance in everyone to the tubercle bacillus worthy of consideration and trial?

I am, Sir, yours faithfully,

University College, Dublin, Nov. 27th, 1917. W. M. CROFTON.

SIR RICHARD CROFT AND THE CASE OF THE PRINCESS CHARLOTTE.

To the Editor of THE LANCET.

SIR,—In connexion with your annotation on the above subject in THE LANCET of Oct. 27th and Dr. Hingston Fox's letter in your issue of Nov. 24th, the following excerpt from the diary of my grandfather, Sir Alexander Morison, who, as a younger man, was appointed Physician-Extraordinary to Her Royal Highness and to her consort, Prince Leopold, may be of interest. This note has not previously been published and is as follows:—

Dec. 19th (1817).—Called on Dr. Baillie, who says the death of the Princess Charlotte was quite unexpected and not easy to be accounted for: for 3 hours after her delivery she was very quiet; then restlessness came on, tossing about and catching breathing, her pulses quick, intermitting, and low. Nothing but cordials could be given as wine, brandy, sp. ammoniæ. On opening the body about 2 ounces of water were found in the pericardium, which appears to have been poured out during her struggles, as the pulse gave no indication previously and (there was) no disease about the heart. About a pint of coagulated blood was found in the womb, but she had lost rather less than is common before, so that, upon the whole, she could not have lost more than 12 ounces above the usual quantity.

Dr. Hingston Fox considers the conditions mentioned confirm Playfair's inference that the cause of death was pulmonary embolism. It is, however, I think, more probable that the pint of concealed blood lost after an exhausting and disappointing labour (for the silence of the infant, if nothing else, must have apprised the mother of its death) proved sufficient to aggravate the cardiac failure notified by the "quick, intermitting, low" pulse referred to. The concord between uterine and cardiac tone post partum, irrespective of the amount of hæmorrhage, is a notable and interesting phenomenon even now not sufficiently recognised, and the loss of uterine tone in this case is shown by its pint-ful capacity. The silent and slow accumulation of blood in such an atonic uterus, even after perfectly normal, and it may be quick, delivery, and even after temporarily good uterine contraction, when unobserved, has been the cause of many an obstetric tragedy. Had the uterus of the Princess Charlotte been rapidly emptied and grasped the tone of both heart and womb might have been restored, with, or it might even have been without, the aid of the cordials mentioned. Pulmonary embolism—that is, thrombosis of the pulmonary artery—so soon after labour is, I think I am correct in stating, a very rare event. Indeed, although I cannot claim expert knowledge in such a matter, I am unaware of the record of any such case. Death under the circumstances seems to have been attributable less to the quantity of blood lost, however, than to the diastolic atony of the viscera. The stomach of the Princess is also stated to have contained *three pints* of fluid,[1] which is still further evidence of this concord both in tone and in atony in the viscera post partum, influenced by the common nervous system, to which I have referred. Some of this gastric fluid was doubtless introduced in the agonised efforts at rescue, the organ being too atonic either to reject or propel it. A satisfactory vomit under the circumstances is frequently associated with an immediate increase of both cardiac and uterine tone.

One must have a deep sympathy with all our brethren of that period engaged in this tragic case (although the every-day tragedy of the cottage is quite as harrowing as that tragedy of the palace), and all concerned seem to have acted to the best of their ability and knowledge. Croft was a fashionable accoucheur of the time and had attended many women of social position, such as the Duchess of Devonshire. Baillie was a sage physician and a noble man, whose mere relationship to Croft would not have secured the attendance of the latter in the case, and Sims was a well-known obstetrician; but none of them seem to have discovered the flaccid uterus reaching as high as the umbilicus as shown post mortem[3] and their efforts at restoration seem to have been limited to stimulation and necessarily so, for the later oxytocics were unknown and the organotherapeutic provocants of general visceral tone still far off in the womb of the future. As regards the grounds for Waldo's assertion of Croft's having been a Doctor of Medicine he may have seen a portrait with the M.D. attached. One such was engraved by W. Holl from a picture by Hayter of the year 1801. It was dedicated to Croft's memory and bears a legend eulogistic of his skill and humanity. As Dr. S. D. Clippingdale states,[4] however, beyond the "chirurgus privilegiatus," mentioned in the *Alumni Oxonienses*, there is no evidence of his having had any other medical degree or qualification.

I am, Sir, yours faithfully,

ALEXANDER MORISON.

Upper Berkeley-street, W., Dec. 1st, 1917.

THE CHRISTMAS APPEAL OF THE Y.M.C.A. TO MEMBERS OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—The members of our profession in all parts of the Empire have given so generously of their skill, time, money, health, and life for the wounded and sick of our Navy and Army that it would seem almost an insult to ask further of them. The appeal, however, which is appearing in the leading London and provincial newspapers is a national one, and we would not wish to be left out of it, and, moreover, this appeal is for the many who are fighting or preparing to fight for us, and not only for those who are *hors de combat*. Our men are worth anything we can give them, and this appeal for £500,000 for the work of the Y.M.C.A. among them is practically equivalent to handing each man three shillings as Christmas-box.

Major W. McAdam Eccles, R.A.M.C.(T.), is willing to receive with thanks whatever sum members of the profession will send to his address, 124, Harley-street, W. 1, before Dec. 20th, 1917, and to hand it over as the contribution of our profession to this fund.

We are, Sir, yours faithfully,

DONALD MACALISTER, K.C.B.
ALFRED PEARCE GOULD, K.C.V.O.
CHARTERS J. SYMONDS, C.B.
Dec. 1st, 1917. W. MCADAM ECCLES, Hon. Sec.

[1] London Medical Repository, vol. viii., No. 48, p. 557.
[2] Dict. of Nat. Biography.
[3] Loc. cit., p. [illegible]
[4] THE LANCET, Dec. 1st.

Obituary.

ELSIE MAUD INGLIS, M.B., C.M.EDIN., L.R.C.P. EDIN.,

COMMISSIONER OF THE LONDON UNITS OF THE SCOTTISH WOMEN'S HOSPITALS (NATIONAL UNION OF WOMEN'S SUFFRAGE SOCIETIES).

THE death was recorded last week of Dr. Elsie Inglis, the Commissioner of the London Units of the Scottish Women's Hospitals, which took place on Nov. 26th at Newcastle-on-Tyne shortly after her arrival with her hospital unit from the Russo-Rumanian front.

Elsie Inglis was the second daughter of the late J. F. D. Inglis, a member of the Indian Civil Service, and formerly Chief Commissioner at Lucknow. She was born in 1865 and spent her early life partly in India and partly in Australia and was brought up in the strict tenets of the Plymouth Brotherhood. Determining to adopt medicine as a profession, she went to Edinburgh and qualified in medicine in 1892 as L.R.C.P. She studied also in Paris, Dublin, and Glasgow, and the Edinburgh degree becoming shortly afterwards available for women, Elsie Inglis, who had already gone into practice, graduated as M.B., C.M. Edin. in 1899. Her bent was strongly towards surgery, especially in its relation to the diseases of women, and she was shortly appointed surgeon at the Edinburgh Hospital and Dispensary for Women and Children, becoming also lecturer on systematic gynæcology to the School of Medicine in Edinburgh. In these positions she soon made herself apparent to all as a woman of professional capacity, great organising power, and high ideals. She encouraged in every way the women students in the Edinburgh Medical School, and was sincerely beloved as well as respected by those whose interests she was working to promote. She was an early and enthusiastic supporter of the movement for women's suffrage, and a prominent member of the Scottish Federation of Women Suffrage Societies, an association with practical politics which, while it gained for her friends and supporters in different directions, occasionally embarrassed her in her relations with some of her educational colleagues, not only those in the minority who did not share her views.

At the outbreak of war she originated the idea of sending to the actual seat of fighting hospital units staffed by women and organised by the Scottish Federation, and it was a great disappointment to her when it was decided by the authorities not to find place for these units on the British front. But the French and Serbian Governments gratefully accepted the proffered help, and Dr. Inglis with a large unit started a hospital at the Abbaye of Royaumont. This hospital was in full work by the first December of the war; its fine record has been chronicled publicly on many occasions, and to-day it is living up to that record. Returning to Scotland when the work in France had been successfully inaugurated, Dr. Inglis obtained permission to start for Serbia in April, 1915, and joined the units already working there as Commissioner to the Scottish Women's Hospitals. She took part in the tremendous fight against the typhus epidemic which threatened the army and civil population alike in the country of our tragic and courageous ally. She became devoted to the Serbians, whose simplicity and complete spirit of self-sacrifice for a cause appealed to her, and in her turn she was adored by the Serbians. She was the only woman on whom the Serbian Order of the White Eagle has ever been bestowed, but her real reward in Serbia was the unbounded gratitude with which the Serbian people received her work. When Bulgaria, or the King of Bulgaria, decided to fight on the side of the Turk, the betrayed Serbian army was forced to retreat, the Austro-German armies, thus reinforced, being able to overwhelm their one small foe, to whom no assistance could be given by her allies. Two hospital units were captured at Krushevatz, and Dr. Elsie Inglis and her colleague, Dr. Alice Hutchinson, together with part of the hospital staffs, who had refused to leave their badly wounded patients uncared for, were taken prisoners by the Austrians. All the hospital stores were looted, and the Serbian patients for whom they had been provided were sent into a deserted and filthy Serbian hospital to make room for the wounded of the conquerors. The hospital units were afterwards handed over to the Germans and finally released, proceeding to England through Switzerland in the spring of 1916. The full story of what had been accomplished by these brave and untiring women for the Serbians in their national agony will surely and in due time be recorded, but sufficient has been made public to enable all to see that no finer conquest of bravery over terror, sanitation over muck, and order over chaos will ever be told. "The Serbian nation," said the Crown Prince of Serbia, when decorating Elsie Inglis with the White Eagle and other of her brave comrades with the Order of St. Sava, "will never forget what these women have done"; their compatriots are not behind in their proud admiration.

Many people, not quite young, sorely tried by cruel experiences, marked by physical hardships, and definitely rewarded for great and acknowledged services, would have sought, for a time at least, a post of lesser personal responsibility, and even one more sheltered from actual risk. Not so Elsie Inglis. On her return she applied immediately to the War Office for permission to take a hospital unit to Mesopotamia. Her request was denied, and to grant it, indeed, would have been accompanied by insuperable difficulties. So her thoughts turned once more to her beloved Serbians, and with a field hospital unit of 75 women, the London units of the Scottish Women's Hospitals, she went out to Rumania with permission to travel by way of Archangel and Odessa. Here the hospital was attached to the Serbian Division of the Russian Army, a Slav corps organised to fight on the Dobrudja front, and Dr. Inglis faced once more the horrors of a great retreat before the invaders, this time of Rumania. For the work done on this ghastly occasion, both for the wounded soldiers, Russian and Serbian, and for the flying civilian population, the "ladies of the unit" were thanked by Mr. Balfour, as Secretary of State for Foreign Affairs. Advancing with the Russians when the armies again went forward, the hospital was re-established at Reni on the Russo-Rumanian front, where it worked at high pressure for nine months, until, in fact, all fighting ceased on that front. Then, and after a journey lasting four weeks across Russia, Elsie Inglis, the Commandant, brought the whole of her unit back in safety, only to die herself within a few hours of reaching England.

Elsie Inglis gave her life for her country and its allies as truly as any soldier in the trenches has ever done and as cheerfully. She was a wonderful compound of enthusiasm, strength of purpose, and kindliness, a threefold blend exactly calculated to allow full play to her great organising abilities. Remarkably modest, she was always full of generous appreciation of others. In the history of this world-war, alike by what she did and by the heroism, driving-power, and simplicity with which she did it, Elsie Inglis has earned an everlasting place of honour.

Dr. Inglis was buried in Edinburgh, the coffin being carried on a gun-carriage covered with a Union Jack and the Serbian flag, and the road to the cemetery was lined by crowds of citizens who had come together to show affectionate respect for her memory.

E. C. S.

EDWARD PARKER YOUNG, M.R.C.S. ENG., L.S.A.

Mr. E. Parker Young, who practised in the district for over half a century, died at his residence, Westbourne-square, Paddington, on Nov. 24th, in his eightieth year. He received his medical education at St. Mary's Hospital, and was house surgeon there after taking the usual double qualifications of the day—namely, the M.R.C.S., L.S.A., in 1860. Subsequently he was appointed surgeon to the Westbourne Infirmary. Mr. Young, who was a member of the first London County Council, was a Past Master of the Society of Apothecaries, and was until recently a member of the Central Midwives Board. He was formerly chairman of the Royal Medical Benevolent Fund and took an active part in the management of St. Mary's Hospital, the Lock Hospital, and various charitable and religious bodies. He was keenly interested in the working of the Young Men's Christian Association.

IN writing last week of the late Dr. Edward Burd's early memories, the name of Charles Darwin's father was inadvertently given as Erasmus. His father was Dr. Robert Waring Darwin, a successful physician practising in Shrewsbury. The error was not made by the writer of the obituary notice.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. A. B. Clarke, M.C., R.A.M.C., attached London Regiment, qualified at Aberdeen in April, 1915, and thereupon joined up. The award of the M.C. was recorded in THE LANCET of Nov. 18th, 1916, p. 881.

Died of Wounds.

Lieut.-Col. A. W. F. Sayres, R.A.M.C., received his medical education at St. Thomas's Hospital, London, and qualified in 1890. He held appointments at St. Thomas's Hospital, at the Bethlem Royal Hospital, and at the South Devon and East Cornwall Hospital, and prior to joining the R.A M.C. was tuberculosis officer to the Stonehouse District of the Devon County Council. Before the war he was attached to the Territorial Force Medical Service, in which he held the position of Major.

Wounded.

Capt. S. H. Harris, R.A.M.C., attached London Regt.
Capt. H. F. Woods, R.A.M.C., attached London Regt.
Capt. N. McA. Gregg, R.A.M.C., attached E. Yorks Regt.
Capt. C. Hunter, R.A.M.C.
Capt. A. J. A. McCabe-Dallas, R.A.M.C.
Capt. K. M. Nelson, M.C., R.A.M.C.
Capt. V. H. L. MacSwiney, R.A.M.C.
Capt. T. F. B. Reid, R.A.M.C., attd. Royal Field Artillery.
Capt. J. R. Barriskill, Australian A.M.C.
Capt. S. G. Gibson, Australian A.M.C.
Capt. T. C. Clarke, M.C., R.A.M.C.
Capt. T. Stansfield, R.A.M.C., attached Manchester Regt.
Lieut. M. B. Taylor, R.A.M.C.
Capt. J. Alexander, R.A.M.C.
Capt. C. B. Davies, M.C., R.A.M.C.
Lieut.-Col. H. W. Carson, R.A.M.C.
Major J. B. McKenzie, Australian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Lieut. G. Hall, M.C., Royal Fusiliers, killed in action, son of Dr. A. Hall, of Surbiton, Surrey.
Major E. A. G. Snell, Bedfordshire Regiment and King's African Rifles, killed in action, only son of Dr. G. Snell, late Colonial Medical Service, of Earl's Court, London, S.W.
Lieut. J. C. Ensor, Welsh Regiment, died of wounds, second son of the late Dr. H. C. Ensor, of Cardiff.
Sergt. A. B. Bond, Australian Infantry, died in Prisoners of War Camp at Münster, Westphalia, son of Dr. J. W. Bond, of Harley-street, London.
Second Lieut. V. R. Atkinson, West Riding Regiment, killed in action, only surviving son of Dr. F. E. Atkinson, of Bowerley, Settle, Yorks.
Lieut. P. B. Clarke, Canadian Infantry, killed in action, only son of Dr. W. F. Clarke, of Toronto, Canada.
Lieut. C. L. Hains, R.N.A.S., reported missing on May 26th, now officially reported killed, son of the late Dr. L. J. C. Hains, of Totnes, Devon, and of Old Brompton, Chatham.

THE HONOURS LIST.

The following awards to medical officers are announced :—

Order of the British Empire.

Commander : Surg.-Lt.-Col. Sir W. R. Crooke-Lawless, C.B., C.I.E., Red Cross Hospital, Netley.
Officer : Lt.-Col. T. H. Symons, I.M.S., in charge of Hospital Ship *Madras*.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for gallant conduct and distinguished services during the past six months in a despatch received from Lieutenant-General G. F. Milne, C.B , D.S.O., Commander-in-Chief of the British Salonika Force. All are members of the R.A.M.C. except where otherwise stated :—

Lt.-Col. (acting Col.) A. R. Aldridge, C.S.I., C.M.G.; Temp. Capt. D. I. Anderson; Lt.-Col. F. Ash; Temp. Capt. R. D. Attwood; Temp. Capt. J. Bain; Lt. (temp. Capt.) D. W. Beamish; Temp. Lt.-Col. E. T. F. Birrell, C.B., C.M.G.; Capt. G. B. Brand; Temp. Capt. A. Benjamin; Capt. A. E. Barnes; Capt. W. H. Brodie; Temp. Capt. M. S. Bryce, M.C.; Temp. Capt. (acting Lt.-Col.) C. V. Bulstrode (Maj. R.H.A.); Lt.-Col. H. J. M. Buist, D.S.O.; Temp. Capt. G. B. Burwell, M.C.; Capt. R. D. Cameron; Temp. Capt. L. Cassidy; Capt. T. Carnwath, Spec. Res. Capt. W. F. Christie; Capt. W. K. Churchouse; Capt. W. A. Clarke, Canadian A.M.C.; Temp. Capt. A. H. Coleman; Capt. (temp. Maj.) G. H. Colt; Capt. E. H. Coyne; Temp. Capt. P. C. Davie; Capt. B. L. Davis; Capt. I. D. Dickson; Temp. Capt. J. N. Dobbie; Lt. W. Donald; Temp. Lt.-Col. L. S. Dudgeon; Maj. P. G. Easton, D.S.O.; Capt. T. C. English, C.M.G. (temp. Col., A.M.S.); Temp. Capt. H. H. L. Ellison; Temp. Capt. R. R. Elworthy; Temp. Capt. H. R. Evans; Capt. H. A. T. Fairbank; Capt. (temp. Maj.) A. W. Falconer; Temp. Capt. D. Fettes; Temp. Capt. W. H. Fleetwood; Capt. W. B. Foley; Temp. Capt. J. G. Forbes; Maj. (acting Lt.-Col.) D. L. Fisher; Capt. W. R. Galwey, M.C.; Capt. J. S. Gaskell; Capt. E. G. Gauntlett; Lt.-Col. G. Gow, Canadian A.M.C.; Maj. (temp. Lt.-Col.) J. Gray; Capt. (acting Maj.) D. A. L. Graham; Temp. Capt. A. R. Green; Capt. A. D. Griffith; Capt. A. W. Harrington; Capt. N. H. Harrison; Temp. Capt. C. S. Van R. Harwood; Temp. Capt. J. F. C. Haslam; Capt. J. R. Hill; Temp. Capt. J. F. Hoare; Temp. Capt. H. G. Hobson; Lt.-Col. J. E. Hodgson; Capt. H. S. Hollis; Col. M. P. C. Holt, K.C.M.G., C.B., D.S.O.; Capt. B. Hughes; Capt. and Bt.-Maj. (acting Lt.-Col.) E. Johnson; Maj. J. G. W. Johnson, Canadian A.M.C.; Maj. J. T. Johnson, D.S.O.; Temp. Capt. J. M. Kelly; Capt. R. E. Kelly; Maj. (temp. Lt.-Col.) A. E. Kidd; Capt. G. F. V. Leary; Temp. Capt. A. A. Lees; Capt. W. A. Lethem; Capt. N. L. Lochrane; Capt. N. V. Lothian; Lt. (temp. Capt.) A. M. McCutcheon; Capt. D. Mallam; Capt. A. C. Macdonald, Spec. Res.; Temp. Capt. W. K. McIntyre; Lt.-Col. C. B. Martin; Capt. W. J. F. Mayne; Capt. P. H. Mitchiner; Temp. Capt. H. H. Moffatt; Capt. (temp. Maj.) K. W. Monsarrat; Temp. Capt. H. G. Murray; Lt.-Col. (temp. Col.) W. H. S. Nickerson, V.C., C.M.G.; Capt. O. J. O'B. O'Hanlon; Capt. A. Oliver; Lt.-Col. (temp. Col.) F. S. Penny, C.M.G.; Col. G. T. Rawnsley, C.M.G., A.M.S.; Temp. Capt. D. R. E. Roberts; Capt. A. B. Schinbein, Canadian A.M.C.; Capt. L. J. Shell; Lt.-Col. and Bt.-Col. (temp. Col.) F. Smith, C.M.G., D.S.O.; Lt.-Col. L. F. Smith, C.M.G.; Lt.-Col. R. H. Starling, F.R.S.; Capt. J. P. Stewart, C.B. (temp. Col., A.M.S.); Temp. Maj. J. W. Struthers; Capt. (acting Lt.-Col.) P. S. Tomlinson; Capt. R. M. Vick; Maj. E. B. Waggett; Maj. (acting Lt.-Col.) J. Ward; Temp. Capt. J. D. Watson; Temp. Capt. T. B. Williams; Capt. M. J. Williamson, M.C.; Capt. E. A. Wilson; Temp. Capt. D. E. S. Wishart; Lt.-Col. S. H. Withers, C.M.G.

MEDICAL WOMEN (ATTACHED R.A.M.C.).

Miss M. A. Blair, Miss B. M. Cunningham, Miss E. J. Dalyell, Miss E. M. Edwards, Miss E. B. Hollway.

The names of the following medical officers, serving with the British artillery in Italy, have been brought to the notice of the Secretary of State for War for distinguished service in the field :—

Capt. J. A. Davies, R.A.M.C. (T.F.); and Maj. (temp. Lt.-Col.) B. H. V. Dunbar, D.S.O., R.A.M.C.

RELEASE OF MEDICAL STUDENTS.

The scope of the Army Council's Instruction of September is extended by the new Order (No. 1751) which provides for transfer to the reserve or discharge from the Army, on application, of any medical student who had at the time of enlistment completed the second year of his professional course. Release is conditional upon resuming medical studies, enrolling in an O.T.C., and passing the examination in anatomy and physiology within six months.

BATHING TRAINS FOR THE AUSTRO-HUNGARIAN ARMY.

In the *Military Surgeon* (Washington, D.C, U.S.A.) for October Colonel Joseph H. Ford, Medical Corps, United States Army, describes a bathing train used in the Austro-Hungarian Army. Its arrangement, he says, gave great satisfaction, and ten other similar trains were in use with the enemy forces. In addition to the usual locomotive for transport it had another altered to pump water and supply steam for disinfection and for warming the bath water. Two living cars housed the personnel (1 second lieutenant, 6 train crew, 17 technical staff). Five store cars carried soap, towels, brushes, 10 per cent. naphthalin ointment in vaseline, 10,000 clean clothing outfits for men to wear while their own was being disinfected. Water for two days was carried in two tank cars, each holding 40 tons. There were three disinfecting cars, of which one disinfected underclothing at 103° C. in half an hour; the other two disinfected furs, overcoats, boots, &c., with formalin at 60° C. in six hours. There were five cars in the bathing section. Men undressed in the centre car, putting each his kit in a sack, taken away at once for disinfection, and themselves they passed into the next car either way, where each picked up soap and towel and washed himself. The bath car had a 25-ton tank on the roof, and 30 shower douches allowed seven gallons of water at 98° F. to fall on each of the 30 bathers in five minutes, by the end of which time he was supposed to be clean. The car was lighted by numerous frosted windows or by overhead electric lights. The man then dried himself and rubbed himself over, especially the hairy parts, with the 10 per cent.

naphthalin ointment and passed into the next car, where he dressed himself in the outfit laid ready for him, remaining there till his own clothes were disinfected and he could change into them. Each train was estimated to bathe 1400 to 2000 men daily, but one, says Colonel Ford, had been known to deal with 3600. Sometimes the bathing train had a laundry attached; more usually the laundry was independent, and carried by a motor lorry with trailer. It had a washing machine, centrifugal drier, drying closets, and a mangle; with 23 men as staff, they were expected to wash a ton of dirty clothes in a day.

PRACTICES OF ABSENTEE MEDICAL OFFICERS.—The following two resolutions were passed at a meeting of the medical profession in the Southampton area during the summer and are now sent to us for publication by Dr. H. L. Hamilton, honorary secretary of the Local Medical War Committee:—

1. In view of the difficulty of the "remaining" doctors getting accurate information, this meeting recommends that each "absent" doctor, on his return to Southampton, should call on his old patients and obtain from them particulars of their having consulted any "remaining" doctor, and the "absent" doctor should be and is hereby authorised to make application to the "remaining" doctor for particulars of any attendance given, and for payment of the half fees earned, and that all doctors be so informed.

2. This meeting recommends that the individual members of the profession should, owing to the difficulty of selling a practice, pay to the representative of any absent doctor (general practitioner) who dies on service, or to himself if permanently and totally disabled on service, £10, if such dead or disabled practitioner was in practice on his own account, or £5 if in partnership, and that all doctors be so informed.

It was resolved with regard to resolution No. 2 that it should apply to general practitioners only, and that the benefits should apply to those general practitioners absent from the town and from their practices. It was also agreed that the widow of any doctor who received the benefit should have the right unprejudiced, so far as the grant would be concerned, to sell the practice.

Medical News.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Nov. 13th, 35 cases were considered and £330 voted to 33 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 38, of M.R.C.S. Eng. who practised at Oxford and died in January, 1917. Applicant was left with five children, ages 10 months to 13 years, and with exception of £1100 capital is dependent on relatives, who cannot do very much. Wants help for the education of the children. Voted £20 and referred to the Guild.—Daughter, aged 56, of M.R.C.S. Eng. who practised in North Wales and died in 1913. Applicant was teaching in Austria when the war commenced and lost practically all her belongings. Only certain income £21 per annum, and this year has been living on a legacy of £60 left her by a relative. Health has been very indifferent of late. Voted £10 and referred to the Guild.—M.B. Edin., married, who has practised at Colchester and London, and is now suffering from cancer. Before the war was making £1000 a year, and owing to the war and illness this was reduced up to three months ago to about £350. Quite unable to work now and living on fees owing to him. Rent £200 a year. Has a daughter and one son, who is in the Army. Voted £5 and the case to be further considered.—Daughter, aged 52, of L.S.A. Lond. who practised at London and Eastbourne and died in 1882. Applicant and her mother lived together until the death of the latter in July of this year, and several small items of income died with her. The applicant has a small school, the profit from which is about £25 a year. Her other income is from investments bringing in about £14 a year. Voted £10 in 2 instalments.—Daughter, aged 34, of M.R.C.S. Eng. who practised in Yorkshire and Bedford and died in 1906. Applicant has been a chronic invalid all her life, and her brother-in-law has kept her since her father's death, but owing to illness and loss of income he cannot do so entirely now. She would like to get into a home. Voted £18 in 12 instalments.—Widow, aged 41, of L.R.C.P. Edin. who practised at Middleham and died on Oct. 3rd, 1917. Applicant left with two children, ages 14 and 9. Wants help for the education of the children. Will get a little from insurance and wants to sell the practice. She hopes to be able to obtain some employment when her affairs are settled. Voted £10 and referred to the Guild.—Daughter, aged 65, of M.R.C.S. Eng. who practised in London and Birmingham and died in 1856. Applicant tries to make a living by sewing, but owing to bad health and the increased cost of living is unable to pay her way. Relieved three times, £36. Last time, March, 1913. Voted £12 in 12 instalments.—Widow, aged 46, of L.R.C.P. Edin. who practised in East London and died in 1915. Applicant was left entirely without means, with one son, now aged 8 years. She is paralysed and unable to do anything. A relative who found her lodgings has recently died, and she is now living in a room at an almshouse paying 2s. per week. Relieved once, £10. Voted £15 in 12 instalments.—Widow, aged 36, of L.R.C.P. Edin. who practised in Edinburgh and died in 1916. Applicant was left with four children, ages 3–11, with an income of £96 a year. Owing to the increased cost of living she finds it quite impossible to manage. Relieved once, £12. Voted £15 in 12 instalments.—Widow, aged 59, of L.R.C.P. Edin. who practised at Langley and died in 1909. Lives in own house, which is heavily mortgaged. Endeavours to make a living by taking in paying guests, but owing to high price of living unable to make ends meet. Relieved seven times, £70. Voted £10 in two instalments.—Widow, aged 60, of M.D. Glasg. who practised in Perthshire and died in 1907. Her total income, from a lodger and other sources, £73. Son who helped to keep the home together now in the Army. Relieved three times, £22. Voted £10.—Widow, aged 71, of L.R.C.P. Edin. who practised at Cardiff and died in 1906. Receives two pensions from other societies, making her income £54. Pays £1 per week for board and lodging. Two sons married and unable to help. Suffers from rheumatism and bronchitis. Relieved 12 times, £88. Voted £6 in 12 instalments.—Daughter, aged 47, of M.R.C.S. Eng. who practised at Redcar and died in 1873. Applicant suffers from tuberculosis and lives with mother, who is unable to help her. She receives two pensions from other societies, total £30. Relieved six times, £62. Voted £10 in two instalments.—M.R.C.S. Eng., aged 48, married, who has practised at Birmingham. Applicant suffers from disseminated sclerosis and is quite helpless. Only income 10s. a week from relatives. Only son recently elected to an Epsom College scholarship. Relieved once, £18. Voted £26 in 12 instalments.—Widow, aged 72, of M.R.C.S. Eng. who practised at East London and died in 1913. Applicant's income is £50, and this is all she has to support herself and daughter. A brother who used to help has recently died. Relieved four times, £48. Voted £12 in 12 instalments.—Widow, aged 47, of L.R.C.P. Edin. who practised at Longelly and died in 1913. Has five children and only two able to assist, they providing £95 a year. One son in the Army and no separation allowance. Increased cost of living makes it impossible for her to manage. Relieved twice, £30. Voted £10 in two instalments.—Widow, aged 54, of M.D. Edin. who practised at Newcastle and died in 1896. Applicant left without means. She obtained work, but fractured her leg some time ago, and has been incapacitated since. Has a daughter who is a widow and works as a clerk, and helps as far as possible. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 65, of F.R.F.P.S. Glasg. who practised at Widnes and died in 1863. Applicant has two pensions bringing her in £40 a year, and is provided with furnished rooms. Her health is very bad and requires special nourishment. Owing to high price of food, finds it difficult to manage. Relieved four times, £20, the last time in May, 1914. Voted £5.—M.R.C.S. Eng., aged 47, married, who practised in London and other places. Applicant has suffered from asthma for a number of years. He joined the R.A.M.C., but after a few months was invalided out. Now totally incapacitated from work, and his wife, who had obtained a post, had to give it up to nurse him. All savings practically exhausted. Voted £20, and recommended to apply to another Fund, from which a little help has been given.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.1.

A WELSH WAR MEMORIAL.—On Nov. 30th Mrs. Lloyd George presided at Shrewsbury over a conference called to promote a fund for the welfare of sailors and soldiers of Wales as a Welsh war memorial. The scheme will unite the Welsh National Fund and the National Fund for Welsh Troops. The Prince of Wales is naturally suggested as the patron of the fund. It is proposed that in order to provide free education at the University of Wales for the sons and daughters of soldiers who have sacrificed themselves for their country a science institution be built at Bangor at a cost of £150,000.

UNITED PROVINCES HOSPITALS.—The United Provinces Government's resolution on the report on hospitals for the years 1914 to 1916 says that from the outset of war heavy and continuous demands were made on the personnel, which has been depleted to an extent unknown in any other branch of the public service. Three-quarters of the Indian Medical Service officers on the civil employment list, and practically all the military assistant surgeons and sub-assistant surgeons, have been transferred to the military service. The expansion of medical activities, which the report nevertheless reveals, is the best testimony to the success with which the department has been administered in circumstances of exceptional difficulty. The thanks of the Government are due to those officers for whom retention in civil employ has meant a heavy increase of work, and to those who have given up private practice or the enjoyment of pension in order to set others free for military service.

SECOND ANNUAL REPORT OF THE NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.—This report contains the record of another year's successful work in providing accurate and enlightened information as to prevalence of venereal diseases and promoting reforms in connexion with them. It includes the addresses delivered by Lord Rhondda, Sir Alfred Keogh, the Lord Mayor of Liverpool, Mrs. Creighton, and Sir Malcolm Morris at the annual meeting in the Queen's Hall on June 13th. During the year ending June, 1917, branch committees of the council had been formed at Bath, Birmingham, Cambridge (co.), Dewsbury, Gloucester, Leicester, Liverpool, London and Home Counties, Newcastle-upon-Tyne, Southport, South Shields, and Tynemouth, where in each case a treatment scheme had been approved by the Local Government Board, and at Bournemouth, Walsall, and York, where some provision for treatment had been made but a scheme not yet approved. An account follows of the work being done by each of these branches, a list of books and pamphlets which have received the imprimatur of the council, and, in an appendix, the terms of the Venereal Disease Act, 1917.

METROPOLITAN HOSPITAL SUNDAY FUND.—The total receipts for this year of the Metropolitan Hospital Sunday Fund now amount to £76,354, or £5655 more than the sum collected last year. There are 239 hospitals, dispensaries, and nursing institutions receiving benefits from the Fund.

DONATIONS AND BEQUESTS.—The late Mr. John William Roberts, of The Dingle, Hale, Cheshire, has left by will £1000 to the Manchester Royal Infirmary and £500 each to the Manchester and Salford branch of the Society for the Prevention of Cruelty to Children, the Incorporated Cheshire and Lancashire Society for the Permanent Care of the Feeble-minded, the National Institution for the Blind for work among blinded sailors and soldiers at St. Dunstan's, and the Crippled Children's Help Society.—By the will of the late Mrs. Ellen Woodgate McMillan Guy's Hospital will receive £2000.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A quarterly meeting of the association was held on Nov. 27th, under the presidency of Lieutenant-Colonel David G. Thomson, R.A.M.C. The appointment of Dr. James Chambers, of Roehampton, as treasurer, in the place of Dr. Hayes Newington, was announced by the chairman, who said that on the same day two of the great pillars of the association, Dr. Newington and Dr. A. R. Urquhart, had died. The meeting marked its sense of bereavement by rising to pass the resolution of condolence to the respective relatives. A similar mark of respect was shown in regard to the following deceased members: Dr. William Graham, medical superintendent of Belfast District Asylum (the result of an accident), and Colonel James Hyslop, D.S.O., Deputy Director of Medical Services, Pietermaritzburg. Dr. David Orr and Major R. G. Rows, R.A.M.C., contributed a paper, with lantern demonstrations, on Experimental Toxi-infections of the Central Nervous System.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

C. V. Samwell to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Assistant Director of Medical Services: Temp. Col. J. A. Roberts, C.B., Canadian A.M.C., vice Temp. Lieut.-Col. J. McCombe, Canadian A.M.C.

Col. F. R. Newland, C.M.G., to be temporary Surgeon-General.

TERRITORIAL FORCE.

Major (temp. Lieut.-Col.) **T. Kay** to be Assistant Director of Medical Services, and to be Temporary Colonel whilst so employed.

Temp. Col. W. C. Beevor, C.M.G. (Lieut.-Col., retired pay), relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services, and is granted the honorary rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. (acting Col.) J. D. Courtenay, Canadian A.M.C., relinquishes the acting rank of Colonel on ceasing to be Officer Commanding of a Canadian Hospital.

Temp. Major G. D. Gray, M.D., to be acting Lieutenant-Colonel whilst in command of the Chinese General Hospital.

Major T. B. Moriarty and Major J. F. Whelan to be acting Lieutenant-Colonels whilst in command of a Medical Unit.

Temporary Lieutenants to be temporary Captains: N. S. Neill, D. F. Riddell, H. L. Martyn, L. D. Cohen, L. W. Kergin, A. F. Cowan, S. G. Kean.

Lieutenants to be Captains: E. M. L. Morgan, H. Morley, R. F. Jarrett, J. W. G. Steell, C. Young, A. W. A. Davies, A. R. Balmain, G. S. Martin, B. H. Simon, G. S. Lawrence.

The undermentioned to be temporary Captains: D. A. Warren, M.C., J. C. Bawden, C. H. Philips, G. M. Shaw, J. T. MacKenzie, A. Drouin, H. M. Godfrey.

Temporary honorary Lieutenants to be temporary honorary Captains: A. T. Paterson, of the St. John's Ambulance Brigade Hospital; C. H. L. Harper.

C. G. L. Wolf to be temporary Honorary Captain whilst specially employed.

T. O. Hutton, late temporary Captain, is granted the honorary rank of Captain.

To be temporary Lieutenants: S. G. Kean, A. G. McKenley, H. J. Starling, C. W. Joynt, L. H. Butler, F. W. H. Pilot, T. B. H. Tabuteau, B. W. H. Fergus, J. G. Millar, W. S. Stevenson, R. Butterworth, J. C. Nixon, A. G. Wright, H. J. Villiers, J. C. Fox, G. H. U. quhart, H. S. Metcalfe, J. A. M. Bligh, H. L. W. Woodroffe, R. Steel, B. S. Laurence.

Officers relinquishing their commissions: Temp. Capts. R. N. Craig, A. E. W. Idris, C. Weeks (granted the honorary rank of Captain), N. McGowan, S. Pinion, A. J. Best, L. Cadins, J. H. O'Neill, W. R. W. Asplin, D. H. Pennant, D.S.O., C. E. Price, E. H. Roberts, R. B. Martin, M.C., D. D. Rosewarne, R. Silcock, A. W. Addinsell, E. R. Edson, Canadian A.M.C., J. D. Maclean, Canadian A.M.C., H. W. M. Kendall, W. S. Holmes, Canadian Army Dental Corps, Temp. Hon. Capt. E. M. Eaton (on ceasing to be employed with a Red Cross Hospital), Temp. Lieuts. H. A. Faulkner, J. H. P. Vivian, P. A. Storey, P. Maguire, W. H. Kirk, H. Nicol (on account of ill-health), Temp. Hon. Lieut. F. A. Simonds.

SPECIAL RESERVE OF OFFICERS.

Samuel Murdock Riddick, M.B., to be Lieutenant.

G. G. Allan (from Edinburgh University Contingent O.T.C.), L. C. Moore and J. W. Brash (from University of London O.T.C.), C. Magee (from Glasgow University Contingent O.T.C.).

TERRITORIAL FORCE.

To be acting Lieutenant-Colonels whilst commanding Stationary Hospitals: Major J. W. Mackenzie, Major I. B. Yeoman.

Major J. A. Coupland, from permanent personnel, to be Major, whose services are available on mobilisation, and is restored to the establishment.

Major (temporary Lieut.-Col.) J. H. Ray relinquishes his temporary rank, and is restored to the establishment.

Major (temporary Lieut.-Col.) R. M. West, D.S.O., to be Lieutenant-Colonel.

Major (temporary Lieut.-Col.) A. Cooke relinquishes his temporary rank and is restored to the establishment.

The undermentioned Captains (temporary Majors) relinquish their temporary rank, and are restored to the establishment: R. Overshaw, F. E. Tylecote.

Capt. G. M. A. Thomas resigns his commission on account of ill-health.

Capt. H. F. Wilkin, M.C., F.R.C.S., is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Capt. J. D. Allen resigns his commission on account of ill-health.

Capt. J. S. Burton resigns his commission.

Capt. A. S. Daly is seconded for duty with a General Hospital.

Capt. A. Gough, Capt. M. Horne, Capt J. Wharton, and Capt. T. C. de Bonnville are restored to the establishment.

Capt. H. W. Beedham and Capt. W. W. Horton resign their commissions on account of ill-health.

Capt. E. Bromet and Capt. B. Fawssett relinquish their commissions on account of ill-health contracted on active service, and are granted the honorary rank of Captain.

Lieut. S. R. Walker to be Captain.

Capt. J. Broadly and Capt. H. Mason are seconded.

Capt. (temp. Major) J. M. Hunt to be acting Lieutenant-Colonel whilst performing the duties of Administrator of a General Hospital.

Capt. R. P. Pollard, from Attached to Units other than Medical Units, to be Captain.

Capt. F. W. C. Brown is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. D. Shannon to be acting Lieutenant-Colonel whilst commanding a Stationary Hospital.

Capt. (temp. Major) J. W. Keay relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. E. B. Argles is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. J. F. Edmiston from Deputy Assistant Director of Medical Services, to be Captain.

Capt. (temp. Major) W. Cowie relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

Captain W. Brown to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (acting Lieut.-Col.) W. Brown relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. J. MacMillan, M.C. to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. H. Armstrong and Capt. W. C. Oram are restored to the establishment.

Captains (temporary Majors) relinquishing their temporary rank are restored to the establishment: D. Douglas-Crawford, J. Hay.

Lieut. S. R. Walker to be Captain.

C. B. Palmer to be temporary Lieutenant-Colonel, Northumberland Medical Volunteer Corps.

INDIAN MEDICAL SERVICE.

Lieut.-Col. W. W. Clemesha to be temporary Colonel whilst employed as Assistant Director of Medical Services.

URBAN VITAL STATISTICS.

(Week ended Dec. 1st, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was equal to 11·9, against 12·2 and 12·5 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·0, or 1·1 per 1000 less than that recorded in the previous week; among the remaining towns the rates ranged from 3·7 in Warrington, 4·8 in Ealing, and 5·1 in Ilford, to 18·2 in Stockton-on-Tees, 19·1 in St. Helens, and 20·4 in Brighton. The principal epidemic diseases caused 307 deaths, which corresponded to an annual rate of 0·9 per 1000, and included 122 from measles, 65 from infantile diarrhœa, 57 from whooping-cough, 48 from diphtheria, 13 from scarlet fever, and 1 from enteric fever. Measles caused a death-rate of 1·6 in Burnley, 1·8 in Brighton, 2·7 in Acton and in Stockton-on-Tees, 2·9 in St. Helens, 3·4 in Leicester, and 5·0 in Dewsbury. The 1344 cases of scarlet fever and 1657 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 29 and 79 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 150 resulted from violence. The causes of 24 deaths were uncertified, of which 7 were registered in Birmingham and 3 each in Leicester, Birkenhead, Gateshead, and Rhondda.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 12·5, against 11·9 and 12·2 per 1000 in the two preceding weeks. The 271 deaths in Glasgow corresponded to an annual rate of 12·7 per 1000, and included 6 each from measles and diphtheria, and 3 each from whooping-cough and infantile diarrhœa. The 62 deaths in Edinburgh were equal to a rate of 10·7 per 1000, and included 1 each from measles and infantile diarrhœa.

Irish Towns.—The 119 deaths in Dublin corresponded to an annual rate of 15·6, or 0·6 per 1000 above that recorded in the previous week, and included 4 from infantile diarrhœa, 3 from measles, 2 each from enteric fever, whooping-cough, and diphtheria, and 1 from scarlet fever. The 105 deaths in Belfast were equal to a rate of 13·9 per 1000, and included 3 from diphtheria, 2 from infantile diarrhœa, and 1 each from measles and whooping-cough.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

A Standing Committee of the House of Commons is now engaged in the consideration of the details of the National Health Insurance Bill. Some progress has been made with the measure at two sittings.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 28TH.

Panel Practitioners and Confinements.

Answering Mr. BOWERMAN, Sir E. CORNWALL, representing the National Insurance Commissioners, stated that the services of a medical man in attending during childbirth upon an insured person were not amongst those which the panel doctor was under any agreement with the Insurance Committee to provide. The question of making provision under national health insurance for medical attendance for insured women at confinement would not require legislation. He recognised the importance of the need for this extension of insurance medical services, and he was giving it earnest consideration at the present time.

Prisoners of Feeble Mind.

Sir W. COLLINS asked the Home Secretary whether his attention had been called to the reports of the Prison Commission and of the Medical Commissioner deploring the want of provision of accommodation under the Mental Deficiency Act for prisoners found to be of unsound or feeble mind and the consequent retention in prison amid criminal surroundings.—Sir G. CAVE wrote in reply: State institution for defectives had been provided at Moss Side where it would have been possible to accommodate a large number of defectives on transfer from prison, but just when it was completed the urgent need of the Army Council for hospital accommodation made it necessary to find these premises for use as a military hospital. In place of Moss Side a State institution for women has been established at Farmfield, and proposals are now under consideration for opening another temporary State institution for men and women. That more accommodation has not already been provided is due to conditions arising from the war, including the difficulty of obtaining suitable male attendants.

Organisation of Medical Volunteer Corps.

Sir W. COLLINS asked the Under Secretary for War what progress had been made with the organisation of medical volunteer corps and field ambulances; in how many counties England and Wales such corps had been formed; and what organisation it was proposed to set up in the case of the County of London.—Mr. MACPHERSON replied: Sixteen county medical volunteer corps have been formed or are in process of formation. The total number of field ambulances provided by these corps is 29. No medical volunteer corps has yet been formed for the County of London, but it may be possible to utilise the services of certain personnel in the County of London if developments which are under consideration mature.

MONDAY, DEC. 3RD.

Remuneration of Grimsby Panel Practitioners.

Mr. TICKLER asked the Representative of the National Insurance Commissioners whether he was aware that the Grimsby doctors had now received a final settlement of their remuneration under the national insurance; that their claims amounted to £9256 10*s.*, and that, after deducting £8 9*s.* 10*d.* for various reasons, they had only been paid £529 6*s.* 7*d.*, leaving an unpaid balance of £2138 13*s.* 7*d.*; and could he say when this balance would be paid.—Sir E. CORNWALL replied: I am not aware that any such balance remains unpaid. Perhaps my honourable friend would be good enough to communicate with me as to the sum which he mentions as the amount of the doctors' claim, as I do not understand it. The practitioners have received the full sum now due to them under their respective agreements with the Insurance Committee so far as known to the Department.

R.A.M.C. Officers in India.

Mr. MACPHERSON (Under Secretary for War) replying to Mr. BUTCHER, wrote: The War Office has taken steps to relieve from time to time certain medical officers who have been a long time in India, and is continuing the process, which is necessarily slow owing to difficulties of transport.

TUESDAY, DEC. 4TH.

Death of Sir Stanley Maude from Cholera.

Replying to Mr. CHANCELLOR, Mr. MACPHERSON (Under Secretary for War) said: I regret to state that it is confirmed that Sir Stanley Maude died of cholera.

Mr. CHANCELLOR asked whether there many cases of cholera in Mesopotamia.—Mr. MACPHERSON: I am glad to say that there are very few cases indeed.

Glycerine and Sugar in Prescribing.

Mr. ANDERSON asked the President of the Local Government Board whether he was aware that the British Medical Association and the Pharmaceutical Society had issued a formulary containing pharmaceutical preparations known as glycerines which were devoid of glycerine and syrups free from sugar; and whether, considering that the formulary was to come into use on Dec. 1st, he would issue instructions to local authorities to take samples of dispensed medicines with a view of submitting them to examination by public analysts.—Mr. PRATT (for Mr. HAYES FISHER) replied: The answer to the first part of the question is in the affirmative. The attention of public analysts has already been drawn to the fact that the General Medical Council has found it necessary to withdraw certain medicinal preparations from the British Pharmacopœia owing to the need for economising in the use of glycerine and sugar. It does not appear to my right honourable friend that any further action on his part is necessary. He is advised that the omission of sugar and glycerine from the preparations in question does not materially lessen their value as medicines.

Mr. ANDERSON asked a somewhat similar question of the Representative of the National Insurance Commissioners, inquiring whether he would take immediate steps to remind Insurance Committees that insured persons were entitled to have genuine medicines prescribed and dispensed for them, and that samples should be taken of dispensed medicines with a view of submitting them to examination by public analysts.—Sir E. CORNWALL replied: I understand that the General Medical Council has deleted from the British Pharmacopœia certain preparations containing glycerine or sugar owing to the importance in the public interest at the present time of restricting as far as possible the medicinal use of these substances to purposes for which efficient substitutes are not available. Alternative preparations have accordingly been formulated in the publication referred to. That document did not require the approval of the Insurance Commissioners. I would remind the honourable Member that it is the duty of every doctor attending an insured patient to prescribe the proper and sufficient drugs and medicines that are necessary for the efficient treatment of the case, and this is in no way affected by the issue of the formulary in question. The Commissioners are not aware of any reason for issuing such a communication to Insurance Committees as the honourable Member suggests.

WEDNESDAY, DEC. 5TH.

American Medical Men in Military Hospitals.

Mr. LYNCH asked the Under Secretary for War whether medical men in military hospitals who were over age had been replaced by Americans; if so, to what extent this practice had been carried on; and whether he would consider the possibility of utilising the services of elderly medical men for the examination of recruits so as to release for active service medical men of military age.—Mr. MACPHERSON answered: The services of medical officers of the Army of the United States of America are being made use of in the military hospitals at home and abroad, not only to release medical practitioners required for the Army, but in order to afford these officers opportunities of acquiring practical military experience with troops under service conditions. The examination of recruits is conducted under the instructions of the National Service Ministry, to whom this part of the question should have been addressed.

Mr. LYNCH: Is the honourable gentleman aware that there are many civil practitioners over military age who are anxious to do the work?—Mr. MACPHERSON: We always try to use the services of civil practitioners. There was at one time a complaint in the House that we were using civil practitioners too much.

BOOKS, ETC., RECEIVED.

APPLETON AND CO., London and New York.

Principles and Practice of Dermatology. Designed for Students and Practitioners. By W. A. Pusey, A.M., M.D. Third edition. 30*s.* net.

BAILLIÈRE, TINDALL, AND COX, London.

Nerve Wounds. Symptomatology of Peripheral Nerve Lesions caused by War Wounds. By J. Tinel, Ancien Chef de Clinique et de Laboratoire de la Salpétrière. Preface by Professor J. Dejerine. Authorised translation by F. Rothwell, B.A. Lond. Revised and edited by Cecil A. Joll, M.B., M.S., B.Sc. Lond., F.R.C.S. 15*s.* net.

A Text-book on Gonorrhœa and its Complications. By Dr. Georges Luys. Translated and edited by Arthur Foerster, Captain, R.A.M.C. (T.C.). Second revised edition. 21*s.* net.

Memoranda on Army General Hospital Administration. By various Authors. Edited by P. Mitchell, M.D. Aberd., Lieutenant-Colonel, R.A.M.C. (T.F.). 5*s.* net.

Venereal Disease Problem. A book more especially for Nurses and Midwives. By J. K. Watson, M.D. Edin. 2*s.* 6*d.* net.

Injuries of the Face and Jaw and their Repair. By P. Martiner and Dr. G. Lemerle. Translated by H. Lawson Whale, M.D., F.R.C.S., Captain, R.A.M.C. (T.) (formerly Captain, I.M.S.). 5*s.* net.

Appointment.

NOLAN, M. J., L.R.C.S. Irel., has been appointed Lord Chancellor's Consulting Visitor in Lunacy.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BELFAST DISTRICT ASYLUM.—Medical Superintendent of Purdysburn Villa Colony Asylum. Salary £700 per annum.
BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.
BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—House Surgeon. Salary £200 per annum.
BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon for six months. Salary at rate of £175 per annum, with board, &c.
BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Surgeon. Salary, if qualified, £150 per annum; unqualified, £100, with board, &c.
BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.
DARLINGTON HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.
DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Resident House Surgeon. Also Assistant House Surgeon.
EAST HAM EDUCATION COMMITTEE.—Temporary Female Assistant School Medical Officer. Salary £325 per annum.
ESSEX EDUCATION COMMITTEE.—School Medical Inspector. Salary at rate of £350 per annum.
GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.
GUY'S HOSPITAL.—Ophthalmic Assistant. Salary 1 guinea each attendance.
LEWISHAM, METROPOLITAN BOROUGH.—Assistant Medical Officer of Health and Maternity and Child Welfare Medical Officer. Salary at rate of £500 per annum.
LIVERPOOL, BROWNLOW HILL POOR-LAW HOSPITAL.—Resident Assistant Medical Officers. Salary at rate of £300 per annum, with rations, &c.
LIVERPOOL ROYAL INFIRMARY.—Honorary Physician.
MANCHESTER ROYAL INFIRMARY (CENTRAL BRANCH).—Resident Surgical Officer. Salary £200 per annum.
MANCHESTER SANITARY COMMITTEE.—Female Medical Officer. Salary £400 per annum.
NEW HOSPITAL FOR WOMEN, Euston-road.—Female Surgeon for Throat and Ear Department.
PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.
QUEEN MARY'S HOSPITAL FOR THE EAST END.—House Surgeon.
ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Female Medical and Surgical Registrars.
SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Senior House Surgeon. Salary £300 per annum, with board, &c.
STOKE-ON-TRENT, COUNTY BOROUGH.—Female Assistant Medical Officer. Salary £350 per annum.
WALSALL AND DISTRICT HOSPITAL.—Female Senior House Surgeon. Salary £250 per annum, with board, &c.
WHITTINGHAM, PRESTON, LANCS., COUNTY ASYLUM.—Locum Tenens, unmarried. Salary £7 7*s.* per week, with board, &c.
YORK COUNTY HOSPITAL.—Female House Physician. Salary £200 per annum, with board, &c.

AN appointment for a Medical Referee under the Workmen's Compensation Act, 1906, for the Hull and other County Courts in Circuit No. 16 is vacant. Applications should be addressed to the Private Secretary, Home Office, not later than Dec. 27th.

Births, Marriages, and Deaths.

BIRTHS.

FFRENCH.—At Keldray, Ailesbury Park, Dublin, on the 25th Nov., the wife of Major E. G. Ffrench, M.D., F.R.C.S.E., R.A.M.C., of a son.
MADGE.—On Nov. 27th, at Ashbourne, Derbyshire, the wife of Quintus Madge, M.R.C.S., L.R.C.P. (temporary Lieutenant, R.A.M.C.), of a daughter.

MARRIAGES.

BARRINGTON-WARD—MILES.—On Nov. 28th, at All Souls, Langham-place, Lancelot E. Barrington-Ward, F.R.C.S., of Harley-street, W., to Dorothy Anne Miles, of Abbots Leigh, Somerset.
COCK—TINDALL.—On Nov. 24th, at the Church of the Assumption, Warwick-street, W., Reginald Cock, M.R.C.S., L.R.C.P., to Molly Helen, elder daughter of the late Charles S. Tindall, Commander, R.M. Steam Packet Company, and Mrs. Tindall, Shoreham Beach, Sussex.
LOVELESS—TRASK.—On Dec. 1st, at St. Andrew's Church, Boscombe, Captain W. B. Loveless, M.C., R.A.M.C., to Sybil Mary, second daughter of Mrs. Trask, Boscombe, and the late John J. Trask, of North Houghton Manor, Hants.

DEATHS.

CLARKE.—On Oct. 28th, killed in action, Lieutenant Paul Brooks Clarke, 124th Canadian Pioneers, only son of Dr. and Mrs. W. F. Clarke, of 2132, Queen-street East, Toronto, Canada, aged 21.
GALSWORTHY.—On Nov. 28th, Laurence Galsworthy, M.R.C.S., L.R.C.P. Lond., aged 47 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

Notes, Short Comments, and Answers to Correspondents.

MATCHES AND PINS.

WITH reference to a recent statement in the House of Commons by Mr. Wardle, Parliamentary Secretary to the Board of Trade, that there are enough matches to go round if each adult will confine his consumption to six matches a day, a statistical minded correspondent writes:—Matches and pins are so indispensable to-day that it is difficult to realise that there was a time when they were not used. Nevertheless, the present shortage of matches and the possible rise of prices in pins, with the consequent need of economy, take our thoughts back to that period. The use of both matches and pins is comparatively modern. As regards matches, although Germany is given the credit for progress in match making, starting in 1680 with one Haukwitz, the first really practical friction matches were made in 1827 in England by John Walker, a druggist, of Stockton-on-Tees, although before that time chemical matches had been made on a small scale which required to be dipped in sulphuric acid to ignite. In 1852 safety matches were made by Lundström, a Swede, and for many years after then were known to almost everybody by the name of "Tandstickers," a corruption of the Swedish name for matches. Although safety matches are supposed only to strike on the box, they will ignite if held against a hot piece of metal such as a hot stove or even rubbed with a swift long stroke on glass. A chlorate of potash tablet rubbed on a safety match-box will light the gas, and so will the spark from a patent metal pocket lighter which happens to have run dry of benzine. Vestas, which are only lengths of fine taper fitted up as matches, although expensive, perhaps may by care be made economical, as if saved after use they can be used again as short tapers for obtaining lights from gas burners. A wax vesta after one short use may, indeed, be used as a tiny candle by splitting the end crosswise to make four feet and standing it on a penny—a light for an emergency.

In October, 1626, in the reign of Charles I., John Tilsby established a pin-making industry, employing a number of people, although brass pins were first brought from France in 1540 and first used in England by Catherine Howard, the wife of King Henry VIII. Indeed, an Act of Parliament was passed for the true making of pins, 34 and 35 Henry VIII. (1542-3) c. 6, but was repealed by 37 Henry VIII. c. 15. To France is due the elegance of the pin, to America about 1830 its modern improvement. Before then several people were employed in making one pin by 14 to 20 distinct operations, but a machine afterwards made them in one. The number of pins used is huge. In 1880 in England the supply was 9 per inhabitant per week; in 1850 it was only 4.

THE CRY OF THE CHILDREN.

"The Robin Society," 421, New Cross-road, London, S.E. 14, of which the King is a patron and whose object is to provide free meals in the winter time, particularly at Christmas-tide, for the very poorest children in the metropolis, makes an earnest appeal for funds. The conditions imposed on the destitute and needy by the war have increased the hard lot of the ill-nourished children of our mean streets, while the funds available for assistance have been smaller, owing to the many extra calls upon charity. But sympathy with suffering demands help, and it must be remembered that the future vitality of the nation depends upon the conservation of the child-life of to-day. In addition to money, clothing of all kinds is urgently needed, and children's games and books and used Christmas-cards are required for the holiday home of the society. Cheques and postal orders should be made payable to "The Robin Society" and crossed London County and Westminster Bank, Ltd., Deptford Branch. The society is unsectarian.

ARTIFICIAL LIMBS.

THE need which has been created as a result of the war has inevitably stimulated the invention, improvement, and production of artificial limbs, and medical men will find the catalogue issued by Mr. F. G. Ernst, 80 and 82, Charlotte-street, London, W. 1, orthopædic mechanician to the National Orthopædic Hospital and other institutions, a useful book of reference. It is a well-illustrated and printed quarto book of 66 pages, and describes in clear language and by diagram and reproduced photographs the mechanical action, not only of artificial limbs, but also of numerous accessory appliances for enabling the wearer to feed and dress himself, shave, smoke, hold a pen, play billiards, handle coins and tools, and attend to lavatory requirements. Instructions

as to the taking of "casts," hints on the use of artificial limbs, and details for measurement when ordering are also given.

NATIONAL BABY WEEK COUNCIL.

THE report of this council, which has just been issued, contains an account of the activities of the organisation during Baby Week, July 1st to 7th, 1917. The donations amounted, it seems, to over £4000, and this sum, together with the profit on the exhibition and receipts from other sources, made a total of £7275 2*s.* 4*d.* Lord Rhondda, in an introduction to the report, states that an atmosphere of inquiring interest has been created, and suggests that all societies and workers for mothers and children should take advantage of that interest, so that next year the council may be able to focus attention on new points.

THE "CRAIGLEITH HOSPITAL CHRONICLE."

In the Christmas number of the *Craigleith Hospital Chronicle*, which begins a new volume, Sir Ernest Shackleton, R.N., contributes an interesting article entitled "Across the Antarctic in an Open Boat." Notes on the Scottish Navy are continued, and the inspiring story of Some Scottish Regiments, by Dr. J. A. MacDougall, is concluded.

F. T.—If such a case were taken before a county court judge, with the brother as defendant, the chances seem to us to be about equal. Our feeling is that the brother is liable, but that all uncertainty and unpleasantness would have been spared if the medical practitioner had ascertained the pecuniary position from the first. This would have given the brother a chance of limiting his responsibilities or of making some arrangement with the patient.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. B. Moore: The Formation of Nitrites from Nitrates in Aqueous Solution by the Action of Sunlight, and the Assimilation of the Nitrites by Green Leaves in Sunlight.—Mr. J. R. Moir: The Transition from Rostro-carinate Flint Implements to the Tongue-shaped Implements of River-terrace Gravels (communicated by Sir Ray Lankester, K.C.B.).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Dec. 10th.

ONTOLOGY (Hon. Secretaries—F. N. Doubleday, J. Howard Mummery): at 7.30 P.M.

Casual Communication:

Mr. W. H. Dolamore: A Case of Gunshot Wound of the Mandible treated with Bruhn's Needles.

Paper:

Major Kazanjain, R.A.M.C.: Osseous Sutures combined with Maxillary Splints for the Immobilisation of Extensive Fractures of the Lower Jaw.

Exhibition:

There will be an Exhibition of Appliances in the Patients' Room behind the West Hall on Monday, Dec. 10th, from 11 A.M. to 7.30 P.M.

Wednesday, Dec. 12th.

OPHTHALMOLOGY (Hon. Secretaries—A. W. Ormond, Leslie Paton): at 8.30 P.M.

Paper:

Lieut.-Colonel Gordon Holmes, C.M.G.: Visual Disturbances from Cerebral Lesions.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY.—4.30 P.M., Lord Charnwood: Technical Training for Disabled Soldiers and Sailors.

HARVEIAN SOCIETY OF LONDON, at the Library of the St. Mary's Hospital Medical School.

SATURDAY.—5.30 P.M., Discussion on Neurasthenia (opened by Dr. F. W. Mott).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones:—

MONDAY.—5 P.M., Lecture VIII.:—Prof. A. Keith: The Principles underlying the Practice of Modern British Orthopædic Surgeons.

WEDNESDAY.—5 P.M., Lecture IX.:—Prof. A. Keith: The American School of Orthopædic Surgeons.

FRIDAY.—5 P.M., Lecture X.:—Prof. A. Keith: Orthopædic Practice in France and Italy.

The Lectures will be illustrated by specimens from the Army Medical Collection now on exhibition in the Museum and also by specimens from the College Collection.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15

MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella.

TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2 30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting.

WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations: Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

THURSDAY.—2.30. P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. E. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.

FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.

SATURDAY.—2.30 P.M., Surgical Operations Mr. H. W. Carson.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. C. Kempster: X Rays. Rodent Ulcer and Malignant Diseases.

WEDNESDAY.—5 P.M., Mr. W. Griffith: Skin Diseases in the Army.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Erythema and Ul-erythema.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 5th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 29	...	65	55	49	48	50	Cloudy
,, 30	...	58	54	49	50	51	Overcast
Dec. 1	...	74	54	48	47	48	Overcast
,, 2	...	60	42	39	36	39	Fine
,, 3	...	56	42	33	31	34	Fine
,, 4	...	44	41	32	31	33	Foggy
,, 5	...	61	43	31	38	41	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS IN THE UNITED STATES.

Messrs. Wm. Wood and Co., of New York, are relinquishing their Agency for the supply of THE LANCET in the United States at the end of the present year. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

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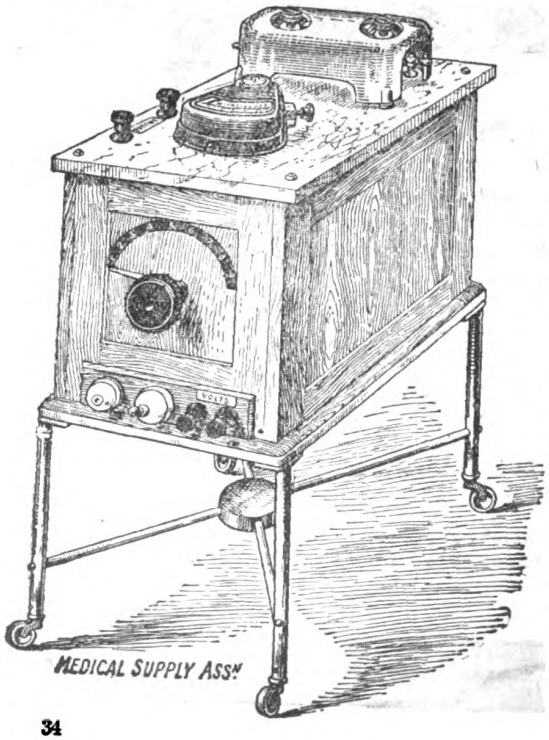
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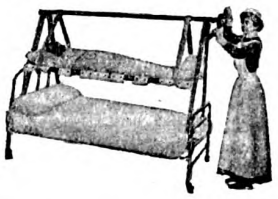
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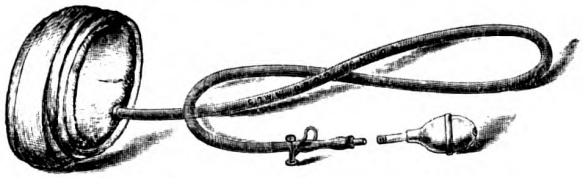
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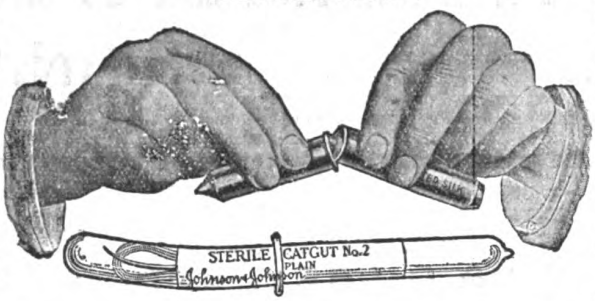
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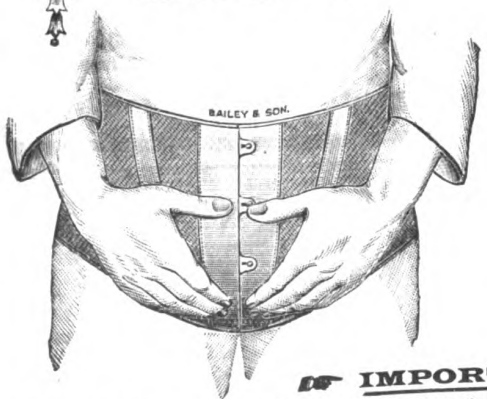


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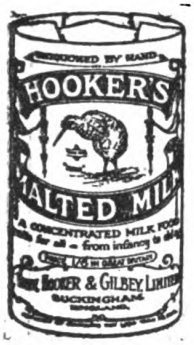
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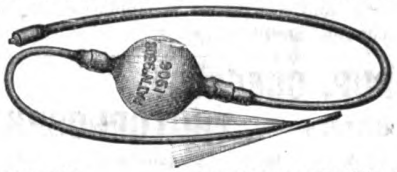
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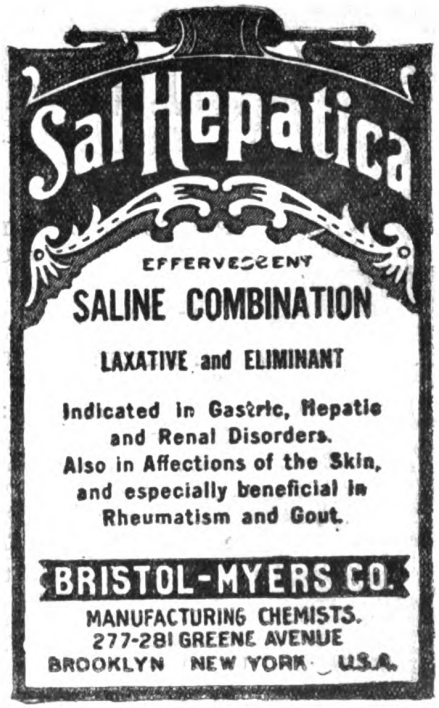


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GHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.
PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 768.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients. The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Ry.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

MATLOCK SANATORIUM

Situated on the edge of the mountain limestone area of Derbyshire, over 700 feet above sea-level. The buildings face south and command beautiful views, while on the north and east they are sheltered by lofty hills. The surrounding country is well known for its great beauty and interest. The climate is dry and bracing. The buildings are lighted by electricity and heated by radiators.

Treatment is carried out on modern lines, all special methods being available in suitable cases. A new X-ray apparatus has been installed, and there is a complete equipment for the carrying out of up-to-date methods in all Tubercular and other Pulmonary cases.

For particulars apply to FREDERICK KINCAID, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire. Telephone and Telegraph: SANATORIUM, MATLOCK 22.

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.
The physician himself was a patient at Nordrach.
For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales.

PENDYFFRYN HALL SANATORIUM

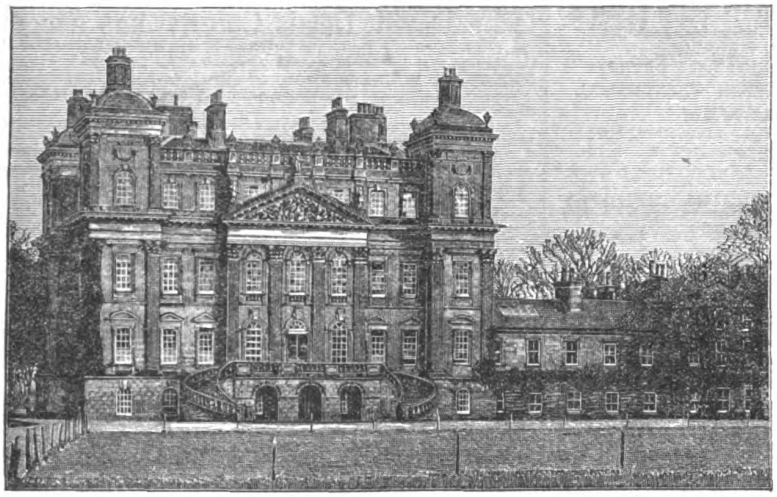
(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.



DUFF HOUSE, BANFF, SCOTLAND.

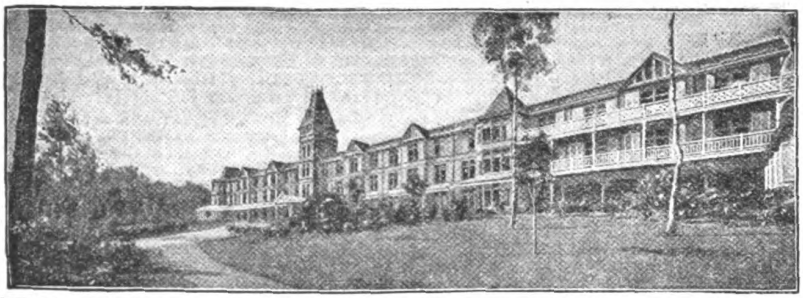
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation an dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

HEALTH RESORT for

TUBERCULOSIS

OPEN ALL THE YEAR.

In 1916: 16,694 Visitors, with 857,509 Days of Residence.

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CANTON OF THE GRISONS, SWITZERLAND.

5200 feet above sea-level.

Best results in the treatment of chronic catarrhal and infiltrative Affections of the Lungs, chronic bronchial catarrh, pleurisy with residual exudate, asthma nervosum, scrofula, chlorosis, neurasthenia, malaria, Graves' Disease, convalescence.

Principal Railway Stations: DAVOS-PLATZ & DAVOS-DORF.

Further information, Guide, &c., *gratis* and *post free* from the **DAVOS PUBLIC INTERESTS ASSOCIATION, DAVOS-PLATZ,** or THE OFFICIAL AGENCY OF THE SWISS FEDERAL RAILWAYS, 11B, Regent Street, Waterloo Place, London, S.W.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88.
Telegrams: "HYDRO, CATERHAM."

Resident Physician:
A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R Harbinson, M.B, B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

SPRINGFIELD HOUSE

Near BEDFORD.

(Telephone No. 17.)

A PRIVATE HOME for Mental Cases, established in 1837, surrounded by extensive grounds, reconstructed and modernised.

Terms from 3 guineas per week

(including Separate Bedrooms for all Suitable Cases).

For terms of admission, &c., apply to DAVID BOWER, M.D., as above, or at 5, Duchess-st., Portland-pl., W., on Tuesdays from 4 to 5.

TO MEMBERS OF THE MEDICAL PROFESSION.

IONIC MEDICATION, RADIANT HEAT,

MASSAGE, REMEDIAL EXERCISES, VIBRATION, HIGH FREQUENCY, SCHNEE FOUR CELL BATHS, NAUHEIM and AACHEN TREATMENTS.

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PORTSMOUTH CORPORATION MENTAL HOSPITAL

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received. Terms from 4½ gns. weekly. Apply, Medical Officer, or Mrs. Peele.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,

BARNWOOD near GLOUCESTER.

Exclusively for private Patients of the Upper and Middle Classes This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.F., the Med. Supt. (Tel. No. 307

HOME FOR FEEBLE-MINDED,

BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

ASHWOOD HOUSE

KINGSWINFORD

STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

Home

FOR THE CARE AND TREATMENT OF

Mentally Afflicted Ladies

OTTO HOUSE,

47, North End Road, West Kensington, W.14.

The Home stands in large grounds close to West Kensington Station.

For terms, apply to Miss BRODIE, Resident Lady Superintendent.

Telephone: Hammersmith 1004.

A. H. SUTHERLAND (Licensed Proprietor), 2a, Marloes Road, Kensington, W. 8.

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at **COLTHURST HOUSE SCHOOL.**

Terms for Ladies and Gentlemen from 30s. a week. Boys at the rate of 30s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

Lady, with 15 years' experience, offers comfortable Home, in healthy Country district, to one mentally defective, insane, or semi-invalid PATIENT. Terms on application.—Miss Boggis, Westwood, Tattershall, Lincoln.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms &c., apply Dr. Haynes Telephone and Telegrams: Haynes, Brentwood 45.

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtsfold," Haslemere, Surrey. Telephone: 29 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

York County Hospital (230 beds, including 110 for Soldiers).—HOUSE PHYSICIAN wanted (Lady). Candidates must be qualified and registered. Applications stating age, with copies of three recent testimonials, to be sent at once to the undersigned. Salary £220, with board, residence, &c.

November 27th, 1917. FREDK. NEDEN, Secretary and Manager.

Royal Free Hospital, Gray's Inn-road, W.C.—Applications are invited from duly qualified and registered Medical Women for the posts of MEDICAL and SURGICAL REGISTRARS. Applications should be sent to the Secretary on or before December 15th, 1917, and from whom further information may be obtained. REGINALD R. GARRATT, Secretary.

Darlington Hospital.—Wanted, fully qualified HOUSE SURGEON, to commence duty January next. Salary £200 per annum, with residence, board, laundry, &c.

Candidates (either sex) are requested to forward copies of recent testimonials, together with qualifications and experience, to the Secretary, A. F. CREEK, 16, Greenbank-crescent, Darlington.

Dumfries and Galloway Royal Infirmary.—Wanted, a fully qualified RESIDENT HOUSE SURGEON, also an ASSISTANT HOUSE SURGEON (Male or Female), to commence duties at the end of the current year. Apply, giving full particulars with testimonials, and stating essential particulars, to Mr. J. SYMONS, Treasurer, 84, Irish-street, Dumfries, on or before 10th December, 1917.

City of Birmingham Education Committee.—SCHOOL MEDICAL SERVICE.—Temporary ASSISTANT SCHOOL MEDICAL OFFICER.—Applications are invited from duly qualified candidates for the post of Temporary Assistant School Medical Officer. Commencing salary £300 per annum, plus £5 per annum travelling expenses. Forms of application and further particulars can be obtained from the undersigned

JNO. ARTHUR PALMER, Secretary of Education.

Education Offices, Council House, Birmingham, 21st November, 1917

Bristol Royal Hospital for Sick CHILDREN and WOMEN.—There is a vacancy for a LADY HOUSE SURGEON. Applications are invited from quite senior students who have had all the usual student's appointments, such as clerk, dresser, &c.

Salary for a qualified lady £150 per annum, and a senior student £100, with board, rooms, attendance, and laundry. Some experience or special distinction in giving Anæsthetics is desirable.

Applications, stating age, training, qualifications, and experience, with testimonials, must be sent to the undersigned.

27th November, 1917. J. E. SMITH, Secretary.

Birmingham and Midland Eye Hospital, Church-street, Birmingham.—Applications are invited from duly qualified Practitioners for the post of HOUSE SURGEON at this Hospital. Male applicants must be ineligible for Military Service.

The Hospital has 120 beds, of which 40 are set aside for Military patients. The Out-patient attendances number about 250 per day.

Salary £200 per annum, with £5 laundry allowance. Separate bed and sitting-rooms are provided for each member of the resident staff, which consist of a Resident Surgical Officer and two House Surgeons.

Applications, with copies of testimonials, should be addressed to the undersigned, from whom all further information can be obtained.

J. W. PEARCE, General Supt. and Secretary.

Essex Education Committee.—School

MEDICAL INSPECTOR.—The Essex Education Committee invite applications from duly qualified Men or Women for the above appointment, to carry out the duties of the Medical Inspection of School Children under the direction of the Committee.

The Inspector appointed will be required to reside in a locality approved by the Committee, and preference will be given to candidates able to devote their whole time to the work. Applications for half-time work will, however, be considered.

The salary offered is at the rate of £350 per annum, with travelling expenses.

Applications, accompanied by three recent testimonials, on forms to be obtained from the undersigned, should be sent in at once.

Canvassing will be a disqualification.

J. H. NICHOLAS, Secretary.

County Offices, Chelmsford, December, 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. H. BUDGETT, Secretary & House Governor.

19th February, 1917.

Belfast District Asylum. — The

Committee of Management invite applications for the position of MEDICAL SUPERINTENDENT of Purdysburn Villa Colony Asylum. Candidates must be registered Medical Practitioners of not less than seven years' standing, and shall have served for not less than five years as a Medical Officer in an Asylum for the treatment of the Insane.

The officer appointed shall devote his whole time to the duties of the office.

The salary will be £700 per annum, with allowances valued (for pensionable purposes) at £150 per annum.

With the Committee's approval, the holder of the office is authorised by Privy Council Order to give Lectures on Insanity to matriculated students of Queen's University, Belfast. Fees, approximately, £200 per annum.

The appointment is pensionable under the "Asylum Officers' Superannuation Act, 1909," and is subject to the concurrence of the Lord Lieutenant.

Applications, stating age, &c., with copy testimonials, to be sent in not later than 12 o'clock noon on 28th inst., addressed "The Chairman of Committee, District Asylum, Belfast."

Belfast, 3rd December, 1917.

City of Manchester.—The Sanitary

Committee of the Corporation of Manchester require the services of a fully qualified Whole-time LADY MEDICAL OFFICER with experience in the treatment of Children's Diseases, to hold (under the direction of the Medical Officer of Health) Consultations and Infant Clinics at the Maternity and Child Welfare Centres of the Manchester Corporation, and (under the like direction) to perform such other duties as appertain to the office.

The salary will be £400 per annum.

A statement of the duties and conditions of the office may be had on application, in writing, to the Medical Officer of Health, Civic Buildings, 1, Mount Street, Manchester.

Applications, stating age and experience, and endorsed on the envelope "Medical Officer, Child Welfare," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than Friday, December 14th, 1917, and be accompanied by not more than three recent testimonials.

The successful candidate will be required to contribute to the Corporation Officers' Thrift Fund, and to execute their Deed of Service.

Canvassing in any form, oral or written, direct or indirect, is prohibited. THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, November 27th, 1917.

Metropolitan Borough of Lewisham.

ASSISTANT MEDICAL OFFICER OF HEALTH and MATERNITY and CHILD WELFARE MEDICAL OFFICER.—The Lewisham Borough Council invite applications from duly qualified Medical persons for the position of Assistant Medical Officer of Health and Medical Officer for their Municipal Maternity and Child Welfare Centre.

The salary will be at the rate of £500 per annum.

The person appointed will be required to give whole time to the duties of the office, and will be under the administrative control and supervision of the Medical Officer of Health. He or she will be required to live within the Borough.

The appointment primarily will be made for one year, subject to three months' notice on either side, and, on satisfactory performance of the duties, it will be made permanent; the appointment is subject to the approval of the Local Government Board.

Preference will be given to candidates (a) having special experience in Maternity and Child Welfare work, and (b) those holding, in addition to other qualifications, a Diploma in Public Health.

Applications for the appointment, stating age, qualification and experience, and accompanied by copies of not more than three recent testimonials, should be addressed to the undersigned, and should be received by him not later than Tuesday, the 1st January, 1918.

Forms of application and further particulars will be forwarded on application.

Canvassing, personally or otherwise, will be a disqualification.

EDWARD H. OXENHAM, Town Clerk.

Lewisham Town Hall, Catford, S.E. 6, 4th December, 1917.

Queen Mary's Hospital for the East

END (170 beds).—Wanted, HOUSE SURGEON. Applications should be addressed to the undersigned, of whom particulars may be obtained.

Male applicants must be ineligible for Military Service.

A. W. SCRIVENER, Secretary.

South Devon and East Cornwall

HOSPITAL, Plymouth (189 beds).—The Committee invite applications for the appointment of a qualified HOUSE PHYSICIAN, Male (ineligible for Military Service) or Female, no age limit, to commence duties as soon as possible. Salary £200, with board, residence, and washing. Candidates should send copies of not more than three testimonials to the undersigned.

Plymouth, 3rd December, 1917. P. J. LANGDON, Secretary.

Royal South Hants and Southampton

HOSPITAL.—Required, a SENIOR HOUSE SURGEON. Must be doubly qualified, Male (ineligible) or Female. Salary £300 per annum, with rooms, board, and laundry. As arrangements are in progress for treatment of Venereal Diseases the salary may be increased by £100 per annum.

Applications, stating age, with printed copies of testimonials (five only), to be sent to me by the 27th inst.

4th December, 1917. T. A. FISHER HALL, Secretary.

Parish of Liverpool. — Resident

ASSISTANT MEDICAL OFFICERS.—Wanted, Resident Assistant Medical Officers for the BROWNLOW HILL POOR LAW HOSPITAL, Liverpool. Male applicants must be enrolled or ineligible for Military Service. Salary at the rate of £300 per annum, with rations, &c. Applications, in candidates' own handwriting, stating age and qualifications, and enclosing copies of testimonials, to be sent forthwith to the Clerk to the Select Vestry, Parish Offices, Brownlow Hill, Liverpool, and from whom all particulars can be obtained.

Walsall and District Hospital.—The

Committee invite applications from ladies for the position of SENIOR HOUSE SURGEON. Salary £250 per annum, with board, residence, and laundry. Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, at once to the undersigned. The Hospital has special departments for the treatment of diseases of the Ear, Nose, Throat, and Eye, and for the practice of Radiology.

4th December, 1917. WALTER FRANCOMBE, Secretary.

Bristol General Hospital. — The

Committee invites applications for the post of CASUALTY HOUSE SURGEON. Salary at the rate of £175 per annum, with board, residence, &c., provided in the house. The appointment is for six months from 17th January next.

Candidates (ineligible for Military Service) must be registered under the Medical Acts, and produce testimonials of good personal character and ability, and must have had recent experience in the administration of Anæsthetics.

Applications, stating age, with copies of testimonials, should be forwarded to the undersigned by Monday, December 17th, from whom further particulars may be obtained.

THOMAS W. GREGG, Secretary.

County Borough of East Ham Education

COMMITTEE. — Temporary ASSISTANT SCHOOL MEDICAL OFFICER.—The East Ham Education Authority invite applications from fully qualified Women Medical Practitioners for the post of Temporary Assistant School Medical Officer. The salary is £325 per annum, and the person appointed will be required to devote whole-time service to the Authority.

Preference will be given to persons who have had special opportunities for studying Children's Diseases, particularly of the Eye, Ear, and Throat.

Applications, which should be on a printed form to be obtained from the undersigned, stating age and experience, together with not more than three recent testimonials, to be sent to me not later than Thursday, 13th December, 1917. F. R. THOMPSON, Secretary.

Education Office, Town Hall, East Ham, E. 6, 3rd December, 1917.

County Borough of Stoke-on-Trent.—

ASSISTANT LADY MEDICAL OFFICER.—Applications are invited for the position of Assistant Lady Medical Officer in connexion with the Maternity and Child Welfare Work, &c., in the Borough.

Salary £350 per annum. Particulars as to the duties and the conditions of the appointment may be obtained on application to the Medical Officer of Health, St. Peter's Chambers, Glebe-street, Stoke-on-Trent. Applications, endorsed "Assistant Lady Medical Officer," and accompanied by copies of two recent testimonials, to be delivered to me not later than 12 noon on Saturday, 22nd December, 1917.

E. B. SHARPLEY, Town Clerk.

Town Hall, Stoke-on-Trent, 30th November, 1917.

Manchester Royal Infirmary.—The

Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointment:—

RESIDENT SURGICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

The appointment is subject to the provisions of the by-laws as to notice of resignation.

Applications, stating age and qualifications, should be sent to the undersigned by the 10th December 1917. By order.

FRANK G HAZELL, General Superintendent and Secretary.

23rd November, 1917.

Guy's Hospital.—There is a vacancy for an OPHTHALMIC ASSISTANT, to attend on Monday and Friday afternoons. Honorarium, one guinea for each attendance. Application to be made to The Superintendent, Guy's Hospital, S.E. 1.

Locum Tenens wanted for the County ASYLUM, Whittingham, Preston, Lancs. Applicants must be single and not eligible for the Army. Terms £7 7s. per week, with furnished apartments, board, and washing.
Apply, with copies of testimonials, to the Medical Superintendent.

Royal Surrey County Hospital, Guildford (200 beds).—Wanted at once, HOUSE SURGEON (Male or Female). Salary £250, with board, residence, and laundry. Applications from Fifth-year Students will be considered at a reduced salary.
Applications, stating essential particulars, with copies of testimonials, to the Secretary.

New Hospital for Women, Euston-road.—Wanted, fully qualified Medical Woman as SURGEON in Charge of Throat and Ear Department. To attend Monday or Thur day morning (to be arranged) at 9.30. Operations first Tuesday in the month at 9.30 A.M. Applications, with copies of three testimonials, to be sent to the Secretary immediately.
IMOGEN H. MURPHY, Secretary.

Liverpool Royal Infirmary.—A vacancy having occurred on the Staff, the Committee invite applications for the office of HONORARY PHYSICIAN to the Institution.
Applications must be made in writing, addressed to the Chairman of the Committee at the Royal Infirmary, Liverpool, and no candidate will be eligible who has not so applied within twenty-one days of this date—viz., 29th December, 1917.
The election will be made by the Election Committee, a list of whom, and particulars of the qualifications necessary for the appointment, will be supplied on application to the Secretary of the Hospital.
Law No. 55 states:—"Any candidate who advertises in the public papers, or canvasses in person, or by writing any Member of the Election Committee, shall be disqualified; but candidates shall be at liberty to send to Members of the Election Committee copies of their applications, accompanied by not more than ten testimonials."
8th December, 1917. H. WADE DEACON, Chairman.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Central Africa. — Medical Officer required with experience in tropical medicine. Must be below fifty years of age. Knowledge of French essential.—Address, stating age and qualifications, to No. 559, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens Provided
at ONE Hour's Notice.
APPLY
ARNOLD & SONS
(J. E. ARNOLD, E. R. ARNOLD),
Surgical Instrument Manufacturers,
TRANSFER DEPARTMENT,
6, GILTSPUR STREET, LONDON, E.C. 1.
Telegrams: "Instruments, London." Telephone: 5240 City.

Assistant wanted with view to Partnership and Succession in a good increasing General Practice in residential outlying suburb, returning about £2500 a year. Appointments about £800. Salary £500 a year whilst Assistant. Premium moderate.—Apply, No. 6233, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

M.R.C.S., L.R.C.P. Lond., with experience of House Physician, &c., seeks House Appointment or Locum Tenens in the South Coast of England, or in Southern Counties of England. Indian nationality, and twenty-six years old.—Good testimonials.—Address, No. 562, THE LANCET Office, 423, Strand, W.C. 2.

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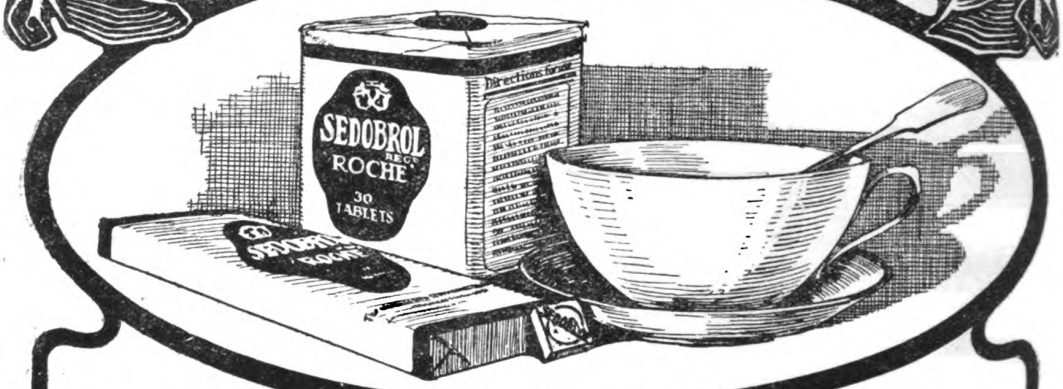
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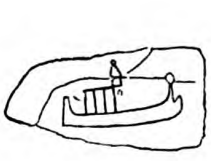
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Prehistoric Burmese combats are recorded by quaint rock carvings, four of which are here reproduced. They represent the landing of an expeditionary force in ancient Burma, and what befell it. No. 1 depicts an enemy transport. No. 2 shows a native and an invader coming to an agreement. Each stretches out an arm, presses thumb against thumb, little finger against little finger, and allows the knuckles of the three remaining fingers to meet. In No. 3 an invading warrior is seen brandishing a sword and holding a prostrate native by the hair, whilst in No. 4 he is depicted holding the decapitated head of the native and dancing with exultation.

[*This series of rock carvings will be continued in Combats Series 178*]

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No. 5 No. 6 No. 7 No. 8

The history of an invasion of ancient Burma is continued in the following rock carvings. No. 5 shows the invaders in possession of the land on one side of a mountain whilst the natives are driven to live with the elephants on the other side. In No. 6, however, the tide has turned, and an invading transport is shown to have been sunk, the wavy lines indicating water above it. No. 7 depicts a native taking an oath in conjunction with kindred tribes—the number of these no doubt indicated by the lines above the tree—to eject the intruder. (Most of the uncivilised tribes of Burma still swear by a tree.) No. 8, the last scene, indicates the expulsion of the invader, a shower of arrows and stones accompanying him. Date, Prehistoric.

[*For Nos.* **1, 2, 3,** *and* **4** *of this series of Rock Carvings see Combats Series* **177**—*Burmese*]

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HOEFFTCKE'S EXTENSION APPLIANCES.

Ambulatory Treatment of Fracture of the Limbs; Tuberculous and Arthritic Disease of Joints.

By C. A. HOEFFTCKE,
7, Harley Street, London, W. 1.

(*Continued from Nov. 10th.*)

WHAT IS ARTHRITIS?

DISEASES of joints are mainly either of tuberculous origin or either septic, such as gonorrhœal, staphylococcal, streptococcal, or coliform.

Many of the latter group are vaguely called rheumatoid. On closer examination some of these cases may have their origin traced to some overlooked primary focus of infection, tonsil, teeth, intestine, &c. In others the cause is not traced satisfactorily.

The exciting cause of the disease in the joints can in the majority of cases be traced to an injury. At the time of the injury the joint is painful; the patient prevents the slightest movement. The blood-supply which has to bring the recuperative substances to the injured part is slowed down through non-exercise of the joint and offers a fair field to the invading bacilli.

A suitable vaccine or counter-irritation by means of massage, electricity, passive or active movements, may heighten the power of resistance in the blood, and by this means effect a cure, especially in very early cases.

When the disease is in a more advanced state and cartilage or even the bony surfaces are attacked the case seems almost hopeless. The pain does not allow the joint to be moved, the muscles contract through the patient's endeavour to bring fresh surfaces of the joint in contact, and deformity is the result. If the tension of the muscular tissues can be released and the joint surfaces pulled apart, in other words, if the joint is extended, the pain ceases and the joint can be moved. The normal blood-supply can be restored through the upright position of the body and exercise, and the joint surfaces recover, and so effect a cure.

To maintain extension between the joint surfaces many appliances have been invented, amongst which Sayres', Hessing's, and Thomas's splints figure prominently, but in all these the pubic bone has to bear the greatest pressure, which is painful; in consequence, the patient contracts his muscles and defeats the object of the appliance—namely, extension.

I claim for the appliance which I have invented that the weight of the body and counter-extension point is transmitted entirely upon the tuberosity of the ischium, which is adequately protected by the gluteal muscles, leaving the pubic bone quite free from pressure, so that the patient is enabled to walk and bear a continuous extension equal to 20 pounds or even more without discomfort.

The absence of pain in the joint when extended, the upright position of the body, and exercise improves the general health, which is also a mighty factor in the combating power of the blood-supply.

The ambulatory treatment with Hoefftcke's Extension appliance for tubercular and arthritic joints, and also for fractures, has been described and illustrated year by year since 1903 (stated in previous announcement as 1913 in error) by eminent surgeons and physicians in the leading medical journals, showing the excellent results which can be obtained by its application.

To make a comparison between the conservative treatment by means of rest and Thomas's splint and my ambulatory treatment I cite the following case, one out of a good many.

Miss R. A. Tuberculous hip.

Treated at first with weight extension in bed and afterwards with Thomas's splint for nine months by two of the leading surgeons of the Royal Orthopædic Hospital.

At the end of this time there was apparent shortening of about two and a half inches and an X ray photograph showed the head of the femur to be partially absorbed.

Another opinion was taken and my ambulatory treatment advised.

As soon as my Extension splint was applied the child commenced to walk and the general health improved rapidly.

After a time it was decided by the surgeon in charge to overcome the adduction. The patient was taken into Great Ormond-street Hospital for Children in the beginning of October, 1914.

The senior consulting surgeon subcutaneously tenotomised the adductors, and I manipulated and abducted the joint on my Extension table under an anæsthetic and reduced the shortening from two and a half inches to three-quarters of an inch. I then put the pelvis and both limbs in the abducted position into plaster, taking care not to release the extension, even for a second, during the operation or subsequent treatment, which is most important.

Three days afterwards the temperature was normal.

A fortnight afterwards I took the plaster off and adjusted my Extension splint to the improved position.

A week after the patient was discharged from hospital, walking well without the slightest pain, with fair movement in the hip-joint.

My splint was worn until April, 1916, when it was taken off at night, and in September, 1916, it was taken off altogether. The shortening is still three-quarters of an inch, which is not noticeable in walking. Instead of the patient having the usual stiff hip, with considerable shortening and a high boot, the result now is that after having been under my Extension treatment for two years since the operation the child is able to dance and jump about as well as any other healthy one, with perfect movement in the hip-joint, and has done so for the last year without any artificial help and without recurrency of the disease.

Many arthritic and tuberculous hip- and knee-joints have been treated in this way, with equally good results, of which I shall be glad to give particulars to any inquirers.

(*To be continued Jan. 19th.*)

A Discussion
ON
THE SURGERY OF
EXOPHTHALMIC GOITRE.

By T. P. DUNHILL, M.D.,
LIEUTENANT-COLONEL, A.A.M.C.; SURGEON TO ST. VINCENT'S HOSPITAL, MELBOURNE.

Methods of Treatment.

IN recent years divergent opinions have been expressed and written as to what is the best method of treatment for exophthalmic goitre.

I. It has been said that operation is the rational treatment, if one regards the manifestations of the disease as due to excessive activity of the thyroid gland. As one authority[1] has said: "If we could be certain that the essential and fundamental cause of the disease is the hypertrophy and over-activity of the thyroid gland, the most rational method of treatment would obviously be to reduce the enlarged gland to something like normal proportions by surgical means." Of those who hold this view some have regarded the operation itself as hitherto too dangerous to justify it being undertaken. The same authority at one time said: "Were it not for the considerable risk of life from the operation, I should not hesitate to recommend it as the most rational and practical method of treatment of the disease."

II. Others[2] have maintained that Graves's disease, as we know it, is not essentially due to thyroid gland activity, and therefore surgical treatment is theoretically wrong and practically useless.

III. Some think that the disease may be more successfully treated without operation. Rupert Farrant[3] has said that if hyperthyroidism were recognised and treated one to three years earlier Graves's disease would cease to exist. Hernaman-Johnson[4] and others say that the treatment should be by X rays.

IV. Kocher, the Mayos, Crile, and the writer believe that the disease can be practically cured by the removal of sufficient thyroid tissue when there has not been visceral degeneration, and can be greatly ameliorated in most cases even when this has occurred.

As I have now performed the operation for removal of thyroid tissue about 1500 times, I propose in the present communication to state what my own experience has been.[5] From half to two-thirds of the number have been cases of Graves's disease. Writing from a military hospital abroad I have not access to my records, but within a narrow margin my numbers are accurate. I have lived for a period of 11 years in the same town or State as most of my patients, and I have kept in communication with almost all of my private patients.

The Case for Operation.

The time seems opportune to present the case for operation, and to discuss what can be done by surgical methods. I take it that everyone wishes to get at the truth of the matter. He will not desire because he is a physician that the treatment should be solely medical, or because he is a surgeon that the treatment should be solely surgical, but in each case it will be his aim that the patient shall have that form of treatment which is most likely to bring about a cure. It ought to be possible to obtain some unanimity of observation among men who are working along different lines to the same end. If experiences could be exchanged; if, above all, men of divergent views could see the same cases before and after treatment, or before and after operation, it should help. Surgeons, as well as physicians, recognise that the removal of a large portion of a gland which is so essential to the bodily well-being as is the thyroid is a confession that the origin of its disturbances has not yet been discovered. But while recognising this, they maintain that the *manifestations* of Graves's disease are the manifestations of excessive and disordered functional activity of the thyroid gland. Working on this hypothesis, they believe that, when other means have failed, sufficient gland tissue may be removed to place the patient on a greatly improved plane of health, while still leaving ample for physiological purposes.

Physicians may pronounce against operation for two different reasons. Some think that operation gives no better results than medical treatment (using medical treatment in its widest application). Others, while recognising that removal of thyroid tissue favourably modifies the disease, consider that the risk of operation is too great: either the immediate risk of operation or the ultimate risk of insufficiency of thyroid. Their judgment is based partly on the result in their own cases which have been sent for operation and partly on the analysis of the published reports of surgeons. Some physicians send their cases for operation when a patient is losing ground, or if a reasonable trial of medical treatment fails to place a patient on an industrial plane.

We owe it to the multitude of sufferers from this disease—for there are a great many—that our minds should be free and open; not only that we should give every method of investigation and treatment its proper consideration and trial, but also that we should not persist in any method to the danger of the patient's life or to the detriment of the patient's welfare. In this article I shall briefly review my own position, stating the reasons that have led me to this position, and quoting cases to illustrate main points. Afterwards I will discuss some of the opinions differing from my own.

Reasons for Operating.

First, as regards reasons for operating. Eleven years ago, when in charge of an out-patient department, I happened to have under my care five or six patients with exophthalmic goitre who were not making progress. Then one other patient came who was very ill indeed. She had been an inmate of a hospital for some months and had had all the treatment that could be given. That patient brought me face to face with the position that something had to be done or she at least was going to die. That was the first outstanding observation. I was given the opportunity of operating upon her. The problem of safety of operation arose. I knew that some cases had been improved in health by operation. I also knew that some cases had died at, or as the result of, the operation. Kocher had published his earlier papers about operation under local anæsthesia. It seemed to me that along the lines of infiltration anæsthesia, together with lightness of handling and rapidity in operating, would lie the greatest measure of safety. For at that time it certainly was not a safe operation. I operated upon this woman, removing the right lobe. She so rapidly lost all the worst of her subjective symptoms and suffered so little discomfort from the operation itself that the other patients who had been associated with her in the out-patient room, on seeing her after the operation, one by one wished to be operated upon. They were all operated upon and all without general anæsthesia, and none of them died. Whatever may be my views now, there was no doubt in my mind then, nor was there in the minds of the physicians who saw these cases, that the infiltration with local anæsthetic was the chief factor in making for the safety of the operation. Nor is there any doubt that, in those days at any rate, it was the knowledge that the operation could be performed without general anæsthesia which mainly induced patients to present themselves for operation and physicians to permit their patients to undergo operation. To most of these points it will be necessary to recur, but for the moment the record of the evolution of one's position is being traced.

Results Depend on Removing Sufficient Thyroid Tissue.

In 1907 A. Kocher wrote: "We find it rarely necessary to resect a part of the remaining gland after excision of one side. We have cured by our operation the patients in 83 per cent. of all our cases."[6] After some months I knew that this was not going to be my own experience except in some cases that were very mild. The worst cases gave the most striking results so far as they went. But these results were far short of cure. The psychical unrest would disappear, as would the feeling of tenseness and strain in the eyeballs. Much of the tremor and the consciousness of arterial throbbing would vanish. If there had been amenorrhœa there would be restoration of the menstrual function;

[1] Hector Mackenzie: System of Medicine, Allbutt and Rolleston, Vol. IV., Part I., 1908. pp. 383, 384.
[2] McCarrison: The Thyroid Gland. London: Baillière, Tindall, and Cox, 1917–1911–1912.
[3] Proc. Roy. Soc., Surg. Sect., p. 121.
[4] Pract., July, 1917.
[5] See also THE LANCET, 1912, i., 422.
[6] The Surgical Treatment of Exophthalmic Goitre, Jour. of Am. Med. Assn., Chicago, 1907, xlix, 1240-12 4.

there would be some reduction in pulse-rate, but not to normal; there would be less palpitation, but it would not disappear completely; there would be improvement in colour and almost always gain in weight. Often there would be improvement in growth of hair if this had been thin.

This constituted a great improvement in the patient's condition, but it was not a cure. If it was left at that, and the patient returned to work, there was frequently a return of the distressing symptoms. This was not a satisfactory position for the patient or for the surgeon.

The return of symptoms is readily understood. The remaining lobe still is usually greater than the whole of the normal gland, and it is more active. Also, ligature of its arteries has never, in my experience, made the slightest difference in the size or activity of a lobe. Within the first six months of beginning to operate one had realised that removal of more gland substance than one lobe was necessary, if one was to place a patient on an "industrial" plane. I then decided to remove a portion of the second lobe when necessary, working from below upward, so as to remove the larger lower pole, while leaving the smaller upper pole with its feeding vessels absolutely undisturbed.

I now found that the percentage of cases practically cured was high; that girls were able quickly to go back to their work and to enjoy their recreations; they completely lost the feeling of bodily heat, and palpitation; their pulse-rates became normal. Still, even after a second operation, in a very small percentage of cases operated upon, it would happen that while almost all the symptoms had disappeared some few, or only one symptom would remain. Generally, in these latter cases, one would recognise that the upper remaining portion of the lobe was obviously bigger than one had judged at the second operation. For, as has been said above, the portion of gland to be left is never dislodged from its position, even to see how big it is. I have written before about the tongue-like process which frequently passes behind the trachea from the posterior border of the gland.[7] Thus one is not able to judge quite accurately. Moreover, the patients are sometimes desperately ill. It is always essential in such cases rapidly to make up one's mind how much it is safe to remove, and very rapidly to complete what one has decided to do. The immediate safety of the patient is always the first consideration. On the other hand, it has sometimes seemed as though there were no excess of gland tissue remaining, no prominence over the remaining part of the upper pole. And yet on operating one has found a mass of thyroid tissue as big as a hen's egg partly behind the larynx and partly behind scar tissue in the neck. The complete recovery from the remaining symptoms after the removal of portion of this—while still leaving sufficient for physiological purposes—is most striking.

To recapitulate: I have always found that removal of one lobe and the isthmus gives improvement which is readily recognised by both patient and observer. The removal of rather more than half the remaining lobe almost always places a patient on a plane of health which enables her to work and play and to feel well whilst doing so. Occasionally a third operation is necessary. When necessary it is generally because one has not been able to judge how much was left at the second operation. The reason one is not able to judge is because the portion to be left is never dislodged.

Illustrative Cases.

I have selected the following cases to bring out certain points. Each two cases are chosen to illustrate one striking symptom or aspect. In some, the photographs show this best (although the photographs were only taken for the interest, at the time, and not for publication). In others, the history is such that it is convincing.

Cases with Much Emaciation.

CASE 1 (Fig. 1A) is that of a woman who had suffered from exophthalmic goitre for about two years. She had had treatment all the time, and had been in a nursing home for about six weeks before I saw her. The photograph speaks for itself as regards the emaciation. The tremor was typical, and in this case the pulse was almost uncountable. There was much vomiting at intervals all through the illness following, but not preceding, its onset. There had been amenorrhœa for nine months. All that could be done by medical treatment and by rest in bed had been done, and the patient was becoming worse. There was no source of toxic absorption that could be detected. Teeth, tonsils, accessory sinuses, bowels, generative organs were apparently healthy. Rest in bed had been carried out, and the patient was obviously nearing the end. With novocaine infiltration anæsthesia I removed one lobe and, later, half the other. I append a photograph (Fig. 1B) of the same woman some months later. These photographs scarcely need comment. One could not conceive a woman more ill than this one was. She is now looking after her husband and is performing her household duties.

CASE 2.—With her I will class a nursing sister (Fig. 2, whom I was asked to see by Dr. W. Pasteur, senior physician to the Middlesex Hospital, London. This sister became ill during the latter half of 1916 and was invalided from her duties. After a period of rest she returned to duty. In 1917 she became much worse, and even after three months' complete rest in bed she was too ill to travel home. Dr. Pasteur gives me permission to state that, when he asked me to see her, he told me that he considered her too ill for operative interference. She had lost 5 stone in weight. The eyes were staring. The pulse-rate, as shown by the chart which I append, was frequently over 150, and not infrequently over 160, after having been for some weeks in bed. The tremor was typical, and she was acutely distressed by the constant sensation of internal pulsation. She had much gastro-intestinal unrest, with severe attacks of vomiting, following but not preceding, the onset of Graves's disease. The patient had been in bed for 12 weeks. The weight had fallen from 12 stone to 7 stone. This sister had formerly been able to lift up another sister horizontally in her arms. Her muscular weakness was now extreme and she was dangerously ill. She was operated upon on May 25th under novocaine infiltration anæsthesia. In five days all abnormal sensation of pulsation had disappeared. The appetite was good. The patient was a happy woman, but the pulse was not normal. This woman is compelled to earn her own living as a nursing sister. If she had returned to work without more being done the symptoms would have recurred, because only one lobe had been removed. There remained still a distinct isthmus and the right lobe. Almost always the isthmus is removed with the first lobe. This woman was far too ill for anything more than the minimum to be done at the first operation. On June 15th I removed the enlarged isthmus and the lower half of the right lobe. I publish the chart of this case. It shows that on the eighth day after the second operation—that is to say, almost at once after sufficient gland had been removed—the pulse dropped to the eighties and remained there. It rose to 120 on one day for a few hours only, the day when her menstrual period was due. Since then it has never been raised. It is now in the sixties in the morning and in the eighties at night after being up and about. I append two photographs of this woman (Fig. 2A and Fig. 2B), one taken ten days after the second operation, whilst she was still emaciated, and one taken three months afterwards. She is still gaining weight every week.

These two cases are published, with their photographs, to show the degree of emaciation which may occur, to show that even in these cases the operation can be performed with reasonable safety, and to show the obvious improvement after a sufficiency of gland tissue has been removed. All tremor has gone; all feeling of eye-strain has gone. All palpitation and sweating have gone, and the patients feel completely placid and restful. Their pulse-rates are normal.

Cases with Extreme Proptosis.

I will now speak of two cases in each of which the proptosis was so extreme that the conjunctiva became œdematous and overhung the lower lids. It appeared as though it were strangulated. The eyelids could not be closed voluntarily. In one ulceration through the cornea of one eye occurred with extrusion of the lens. In both the eyelids were stitched together for a period.

CASE 3.—Miss J. (Fig. 3) was a stout woman, and she had lost no flesh, but she was very ill. There was tremor and the pulse-rate was very rapid. The exophthalmos was extreme, the conjunctiva in each eye being œdematous, and overhanging the lower lid as though it were strangulated. I removed one lobe of the thyroid gland and the patient was improving, when she got an attack of influenza and bronchitis. The constant coughing, together with the associated coryza, made the eyes much worse somewhat suddenly. The cornea of one ulcerated, and in spite of constant attention by an ophthalmologist the ulcer deepened in the œdematous and inflamed conjunctiva, and extrusion of the contents of the eyeball occurred. I removed half the second lobe to lessen the absorption of the thyroid secretion, and Dr. Edward Ryan sutured together the eyelids of the remaining eye in order to protect the cornea. The pulse-rate dropped to the eighties and the sound eye receded. When it was judged safe the eyelids were separated and then the disorganised eye was enucleated. It was long before the cornea haze disappeared from the sound eye, but now she can read well. A glass eye has been fitted, and one would not know that she had ever suffered from exophthalmic goitre. She lives her normal life.

[7] Med. Annual, 1913, and Brit. Med. Jour., 1909, 1222-1225.

Fig. 3A is not in good focus, but it shows the salient features. The bulging forward of the eyes above the lower lid can be seen and the raising of the outer half of the eyebrow. It was taken after the first operation. Fig. 3B shows the same woman now.

I want to mention briefly a similar case.

CASE 4 was that of a man whose eyes were proptosed to such an extent that the conjunctiva was œdematous and bulging beyond the eyelids. His legs, thighs, and lower part of his abdomen were dropsical and œdematous from the heart failure; the apex beat was three-quarters of an inch outside the nipple line and the pulse was extremely irregular. The goitre was very large, as I have frequently found it in men who suffer from Graves's disease. I will not go into the details of the operation more than to say that I was compelled to remove what was necessary in three stages. The gland was so big, so friable, and so very vascular—the hæmorrhage being very severe on cutting across the gland tissue—that each time it was imperative very rapidly to remove just what one felt one safely could. Quite a large piece was removed each time. What remained after the second operation appeared to be as large as a cricket-ball. A severe cold with much coughing supervened immediately after the third operation. He could not voluntarily close his eyelids, and the œdematous, bulging conjunctiva became inflamed. The cornea became hazy from exposure. The conjunctiva appeared to be strangulated. As in the last case, the eyelids were sutured together to protect the eyes. This was done by Dr. Ryan.

The eyes receded a great deal and the lids were separated. The heart's apex has come in considerably, the œdema of the body has completely disappeared, leaving lineæ bicantes. The pulse remains irregular, but not unduly ast. In this case there was, of course, an advanced grade of isceral degeneration, as shown by the dilated heart, the regular pulse, the back pressure with ascites and œdema. One cannot cure where heart muscle has become degenerate, but having removed the poisoning agent it is wonderful what power of recuperation a heart even in this state has. The improvement begins immediately sufficient gland has been removed. I publish his photograph (Fig. 4). It was not possible, in separating the eyelids, to divide between the lashes of the upper and lower lids. The separation had to be done partly at the expense of the lower lids. This is seen to be particularly the case in the outer half of the lower lid, but the upper lid is seen to come well down over the upper margin of the iris. I regret that I have not a photograph of this man before operation to show the proptosis, but he was far too ill.

It may not appear to be worth while to do this amount of work for a result which, in a case of visceral degeneration, cannot be perfect. But it has transformed a man who was bedridden dropsical wreck, with eyes almost out of his head, into a man who is able to walk about freely, and to be a comfort to his wife and child.

I have published the notes of these two cases to show that the eyes may recede, if sufficient gland tissue is removed, even when the proptosis has been extreme.

The last patient belongs to a class of cases which most writers regard as unsuitable for operation, chiefly on account of the danger of operation, but also because the extent of visceral degeneration is thought to preclude any considerable degree of improvement. I can state definitely that great improvement follows operation if the gland is still in a state of increased activity, and I have never lost a case of this type of operation. It goes without saying that for this type local anæsthesia is absolutely essential.

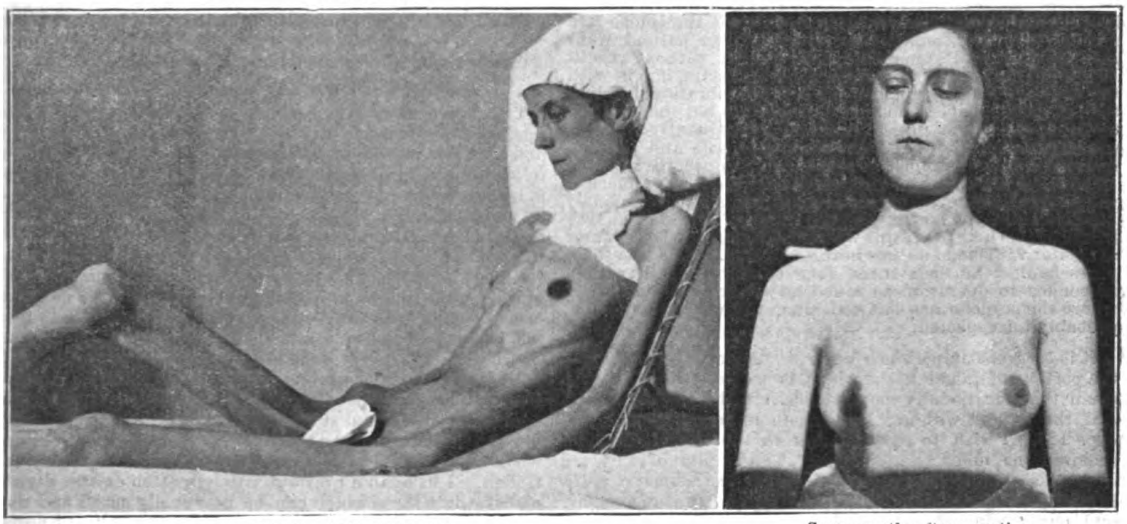
Cases showing Need of Removing Sufficient Gland Tissue.

I wish to speak of two cases, in each of which it was necessary to operate a third time, in order to get rid of some one remaining symptom.

CASE 5.—Miss M. was a healthy girl in the early twenties, when she developed exophthalmic goitre. The goitre, the prominence of the eyes, the tremor, the rapid pulse and the palpitation, were all characteristic. The first operation was one of the first six that I performed for this disease (1906). Consequently I removed only one lobe. She was improved, but remained far from well. This was the first case which compelled me to recognise that removal of one lobe was not going to cure, and I removed a part of the second lobe. After the second operation she lived a fairly active life, but she still had a large piece of gland tissue remaining in the region of the upper pole of the left lobe and was not free from tremor and palpitation. Her eyes had become practically normal after the second operation. I decided to remove still some more. This I did, and within a few days she felt quite a different being. Her eyes are now normal, her pulse is normal, she has no tremor and no palpitation. She has undertaken a tour on foot, lasting five days, over mountains, carrying a knapsack, and sleeping at nights in ordinary accommodation houses. She plays tennis regularly and is quite well. This was not due to rest in bed or medical treatment. Each time she entered hospital the night before the day of operation. As soon as *sufficient* gland tissue was removed she was completely better. Ten years later her health is normal. She is a vigorous woman.

FIG. 1A.

FIG. 1B.

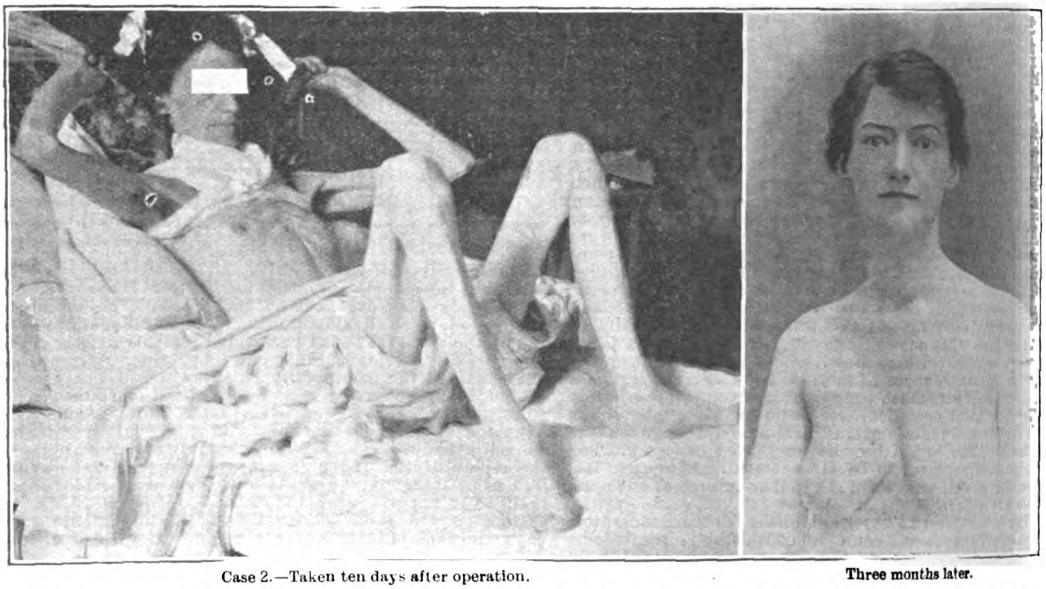


Case 1.—Before operation. Some months after operation.

The effect of the third operation in the next case of which I shall speak is most striking. A typical case, she was first operated upon by a colleague of mine and one lobe was removed. She considered herself sufficiently better to dance and do housework. During the absence of her surgeon abroad she became worse. The heart dilated, with the apex beat well outside the nipple line, and the pulse became irregular. The remaining lobe, always the larger of the two, was very big.

It was necessary to operate, because one saw her becoming steadily worse. Rest in bed had no effect. Two-thirds of the remaining lobe were removed. Following this, the eyes, which had been decidedly proptosed, became normal. The pulse lost all irregularity except on the rarest occasions. The apex of the heart came to within the nipple line and the pulse rate fell to normal. But the tremor remained and was most distressing. There appeared to be no excess of thyroid gland tissue, and for about two years I watched her

FIG. 2 A. FIG. 2 B.



Case 2.—Taken ten days after operation. Three months later.

in this condition. The eyes were normal, the pulse-rate normal, but the tremor was obvious. The patient went into hospital and remained there resting without result. Drugs did not control the tremor. On shaking hands with her she gave a firm grip, and one felt the vibration. It was then decided to open the neck through the old incision and to see if there was not, as one had so frequently found, a prolongation backwards from the upper pole and postero-internal border behind the larynx and upper part of the trachea. I did this, and discovered that there was a piece of the thyroid tissue, as big as a small hen's egg, completely hidden behind the larynx and the trachea. I removed two-thirds of this and the result was most dramatic. Every trace of tremor vanished and has never returned. This was three years ago. I am convinced that cases which have not responded to operation as much as was expected are cases where the surgeon has left too much thyroid tissue behind, probably unsuspected.

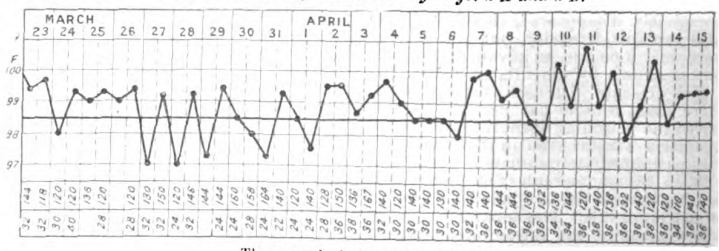
It is of great importance never to dislocate—or handle—the portion of gland tissue which is to be left. This will mean that occasionally more will be left than one suspects, and the patient will not be as much improved as one had expected. I wish to say here that in this case I probably removed too much gland tissue. The results of this are that occasionally this patient feels slight rheumatic pains in the right wrist. There are no other symptoms of deficiency, and one grain of dried thyroid tissue a day clears up the wrist pain when present. One might doubt the connexion if it were not for the effect of the administration of the small dose of gland tissue. The proptosis, irregular heart-beat, palpitation, and tremor, which made her very ill, are all gone, and she now lives a very active life, with the sole discomfort of occasional stiffness or slight pain in one wrist. Strangely enough it is only in the one wrist.

The preceding two cases are recorded to show how necessary it is to remove sufficient gland tissue if one is to obtain a result approaching a cure. And yet one must never overdo it. There are few surgical operations where the same degree of judgment is required.

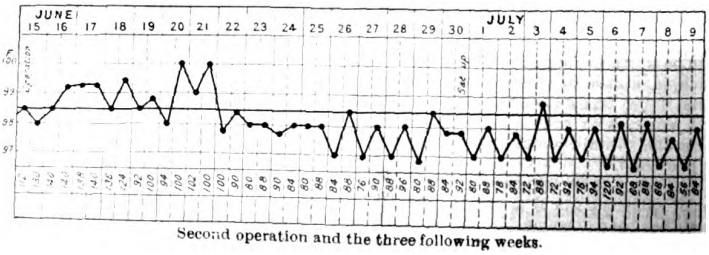
Disabled Cases Greatly Improved by Operation.

Two other cases are extremely interesting. Each had reached the stage of cardiac dilatation with irregularity of pulse. Each was operated upon as a last resort. These two, following the operations, have each lost all irregularity of pulse, except about once a fortnight. Then for from 12 to 24 hours the heart will begin to beat irregularly and to cause the greatest discomfort. After about 24 to 48 hours the irregularity ceases as suddenly as it began. For about a fortnight again they each work exceedingly hard, with a quite regular pulse, and they feel safe until the next turn comes. This may not seem a very good result, but these two cases were quite disabled before operation. One was bedridden. They were operated upon to try to prolong life, not with the hope of effecting a cure. After four years these two are still holding their own to the same extent. One manages an hotel and store. The husband of the other has gone to the war, and she manages her house and two children without a servant. This is the one who was completely bedridden. I have in a previous article written on the division of cases into those which can be practically cured and those which—through degeneration of cardiac muscle, as evidenced by irregularity of pulse, dropsy, or albuminuria—cannot be cured but may be greatly improved.[s]

Chart of Case 2, illustrated by Figs. 2 A and 2 B.



Three weeks before first operation.



Second operation and the three following weeks.

Further Discussion of the Case for and against Operation.

I have published more or less detailed notes of these eight cases to show what can be done, and done fairly safely, by one who has the requisite judgment and skill, and to show what measure of improvement may be expected to follow.

[s] Dunhill: Brit. Med Jour., May 22nd, 1909

In all the cases the patients were exceedingly ill. Six of them were so ill that few practitioners would have regarded them as having much chance of living, much less of improving. And these eight cases are selected from a great number of similar cases. In this article I am not giving detailed descriptions of the disease nor describing operations upon cases of the subacute or chronic type, cases that are holding their own without getting much better or worse. I have done that in previous articles.[9]

I do not say that every case should be operated upon, and I am far from saying that every case should be operated upon at once or even early. But I want both physicians and patients to know what can be done and how it can be done with reasonable safety.

Hale White states that 50 per cent. will be cured by ordinary medical means. I think it will be admitted that this 50 per cent. will include early and mild cases—cases which are still definitely Graves's disease—as seen by a physician in his private or hospital practice. When people begin to feel unwell they consult their family doctor or a physician, not a surgeon. Surgeons very rarely see early cases.

Of the operation results collected by McCarrison he puts down the average percentage of cures as 60. He says that this is not a sufficient improvement on the 50 per cent. cures due to medical treatment to justify the risk of operative mortality. I do not wish to argue on statistics, but it is necessary to point out that whilst the medically treated cases include all early and mild cases, the surgically treated cases are practically all cases which have come through the medical filter—i.e., they are cases which have only been permitted to come to the surgeon after medical treatment has failed to improve them. So that the 60 per cent. cured by surgical means is really 60 per cent. of the remaining 40 per cent. which medical treatment has failed to cure.

Marine and Lenheart, as a result of their histological work, state that:—

"The differences between the pulse-rate of the normal or colloid glands and of the most marked active hyperplasia are so slight as to bear no suggestion of any causal or effect relation. If any relation exists, the objective evidence would tend to indicate a hyposecretion rather than a hypersecretion, since the pulse-rate bears no relation to the amount of secreting surface, and a negligible relation to the histological structure of the gland."

One recognises the very high order of the work done by these two observers, yet it is difficult to make their findings accord with observed clinical facts. Removal of hyperplastic tissue causes an immediate drop in pulse-rate. The chart which I have published is that of a woman who had been in bed for a long time. She had had the best medical attention. She was not holding her own. Dr. Pasteur gave it as his opinion that she was too ill to stand operation. The chart after the operation speaks for itself. This can be observed in every case when once sufficient gland tissue is removed. The drop in the pulse-rate follows removal of tissue, and it follows quickly, and it follows when neither rest, nor medical treatment, nor elimination of toxic sources has been able to do it. And it follows when patients have reached the stage when surgical interference is, to say the least, a hazardous proceeding.

If in the case of a person severely ill with Graves's disease the state of the thyroid were hyposecretion the removal of three-fourths of the gland should cause myxœdema at once, and fairly constantly. Yet it never does, either immediately or later. On the contrary, one can show the loss of psychical unrest and a condition of physical well-being which, before operation, was foreign to the patient.

FIG. 3 A.



Case 3.—Taken after first operation.

FIG. 3 B.



Present day.

FIG. 4. (Case 4.)



Results of Medical and Surgical Treatment.

McCarrison says:—

"There is no definite proof that the cures effected by surgical means (i.e., by hemithyroidectomy alone, or with ligation of arteries) are more lasting than those effected by medical means. As judged by these results hemithyroidectomy possesses little advantage over medical treatment. It may result in some amelioration of the symptoms, but this might reasonably be considered to be due in part to the enforced rest in bed."

One would like to point out in this respect that *hemithyroidectomy* is not the operation which is performed for the cure of Graves's disease. In 1909 I wrote in the *British Medical Journal* that it was necessary to remove portion of the second lobe (always leaving sufficient for physiological purposes).

Later, Halsted wrote of the necessity for partial *double* lobectomy for the cure of the disease. The Mayos and Crile have written similarly.

Hemithyroidectomy, even with ligation of arteries, has never, since 1907, been regarded as the operation for the cure of Graves's disease.

McCarrison also writes that it is no use swelling the literature with reports of cases "cured" by thyroidectomy without the fullest information concerning each case. The cases I have given are typical of the cases which come to the surgeon from the physician. I could multiply them indefinitely. Yet on carefully searching through McCarrison's book I am able to find only one case of Graves's disease from his personal experience with any details given.

In the often slow evolution of the disease, in its very chronicity, lies the danger. The patient who is anxious to be better and the practitioner who is anxious to avoid operation may each be lured into thinking there is an improvement, or that, at least, the patient is holding her own, or that time is of no moment, while the best years of a woman's life are slipping by. Too often the apex of the heart is creeping out, visceral changes are taking place, and the proptosis is becoming permanent. The woman is ceasing to be able to occupy her usual position

[9] Dunhill: Brit. Med. Jour.; Proc. Roy. Soc., 1912; Med. Annual, 13.

in the social order. I grant almost all that they say to those who, like McCarrison, state that the search for the cause should be relentless and unceasing. But while the cause is being sought for, patients must not be allowed to die, and more than that, they must not be allowed to lose the best years of their lives or to sink into a condition of visceral degeneration. One does not allow patients to die of appendicitis or of cancer whilst one is searching for the cause. They both have causes. The conditions which we call appendicitis and cancer are the results of some pre-existing cause. When the condition is established and is menacing life we deal with it as such, whilst all the time the search for the cause goes on. Some pre-existing condition pulls the trigger to start the thyroid on its dystrophic course. If the patient, though ill of the disease, is still well enough to be the subject of prolonged investigation, this should be done, and no stone should be left unturned to discover the cause But this course should not be obstinately persisted into the peril of the patient The following incident is related to show to what extent the search for the cause may be pushed.

A woman of 24 years had all the cardinal symptoms of the disease. The eyes were greatly proptosed. She was being treated by a goitre specialist, who had followed the recent work on the septic origin of the disease. He had sent her to a rhinologist who had removed her tonsils. He thought this was not efficiently done, so he sent her to another to have them enucleated. Then a deflected septum was attended to. Following this, some of the accessory sinuses, ethmoidal or sphenoidal, were cleaned out. Next she had a prolonged course of X ray treatment. He then was about to compel her to have all her filled teeth extracted—which meant almost all her teeth—because "the disease is always due to a septic focus; you are not cured by what had been removed, therefore it must be your teeth." At this stage she asked to see me in consultation. A dentist pronounced the teeth well filled and sound. Her troubles had been going on for some years. One lobe and half the other were removed at one operation, with much greater relief than had followed all the previous treatment.

If rhinologists say the septic focus is in the naso-pharynx and accessory sinuses, and the "intestinal stasis" men say that the cause is in the alimentary canal, the patient will have to travel a long lane before she comes to the turning. Septic foci should always be removed before anything further is done. Tonsils, teeth, sinuses should be investigated, as well as abdominal condition, and thoroughly—but with wisdom, judgment, and restraint.

Re X ray treatment: The difficulty of preventing burns has, I believe, been overcome. It is not so easy to judge how much active gland tissue the rays will destroy. The effects, I understand, continue after the application of the rays. I do know of one case in which myxœdema followed X rays. And I do know of cases which have had to come to operation after X ray treatment has proved ineffective.

It is a question whether one can more accurately judge the amount to be left by operation, where one can leave an upper pole with its own blood-vessels quite intact and fully functional, or by X ray, with which one does not know the exact amount or extent of cell destruction.

I can vouch that it is a fact that whatever is left after operation does not atrophy, but rather tends to increase in size. Also, from carefully reading Hernaman-Johnson's paper, I think there is no doubt that the degree of improvement following operation is much greater than that following X ray treatment.

Questions of operative technique, anæsthesia, safety of operation, death-rate, division of cases into types, and the response of different types to removal of gland tissues, amount to be removed, and best time for operation, importance of parathyroids—all of these must await a later article, when I can obtain access to my own records.

MEMORIAL SERVICE IN LONDON FOR THE LATE DR. ELSIE INGLIS.—At the service held on Dec. 6th at St. Margaret's, Westminster, in memory of the late Dr. Elsie Inglis, the Bishop of Oxford analysed the qualities which had made her life so fruitful of results. Personal surrender and warm sympathy were combined in her with the gift of organisation and of wise government. Twice she had rescued the Serbian nation from despair by her splendid courage, and her name was revered by the Serbians almost as one of their legendary heroes. Representatives of the Allied Governments were present at the service, including Mr. Balfour, Lord Robert Cecil, and Sir Alfred Keogh. The Red Cross Societies and various Women's Societies were strongly represented.

NASAL RECONSTRUCTION.

WITH A NOTE ON NATURE'S PLASTIC SURGERY.

BY J. L. AYMARD, M.R.C.S., L.R.C.P. LOND.,

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TIME and other conditions being favourable, it would have given me the greatest pleasure to have published my failures of the past 18 months in their entirety. I would, however, point out that such failures, accompanied by any small success I have achieved, are duly noted and illustrated in the records of the Queen's Hospital.

My excuse for writing this article must be that opportunity has perhaps placed me in a favourable position with regard to ample material. Whilst flaps and methods for reproducing the complete nose have in the past been fully written up in most surgical text-books, the causes for failure are hardly ever dealt with, and details of the work are sadly deficient.

Let me start by reminding those who have not seen cases prior to operation that almost the *greatest difficulty* presenting itself is the fact that when the nose has been destroyed by war injury the scar tissue surrounding the lost organ has to be utilised for the junction of the new flap. The most common cause of failure is probably due to the fact that the nasal cavity is not an ideal aseptic one any time, but rendered much more unhealthy owing to the inevitable damage to one or more of the sinuses and their surrounding tissues. This cause of failure has been partially due, certainly in my own case, to undue haste, in not recognising the Golden Rule—that no plastic operation of any kind can possibly suffer through reasonable delay.

The Principle of Nasal Construction.

One is so apt to formulate principles only to discard them later that I feel somewhat diffident in attempting to do this. However, I think most rhinoplastic surgeons will agree with me that the following require attention:—

The *flap* should be taken, if possible, from the site likely to lead to the least ultimate disfigurement. The *lining of the flap* should take some form other than scar tissue. The *new organ* should, as much as possible, correspond with the original. The *supporting framework* should, as closely as possible, simulate the original. The *bed area for the new organ* should be most carefully prepared.

Having relieved myself of these ideals, I will show later how I produced a fairly respectable organ by unintentionally almost discarding them.

The Flap Taken from the Forehead.

The side from which this is taken depends entirely upon the largest area free from hair.

The second case described shows a new method I am trying. It consists in taking a long pedicle flap with its base near one clavicle, and forming the nose upon the chest on the opposite side, keeping the head slightly bent upon the chest for 14 days.

I have adopted this method, not because I am entirely disappointed with the forehead scar, but because, if successful, the advantages in time, &c., would be considerable.

If this chest flap fails, I shall then resort to two flaps as used in the first case illustrated (Fig. 2), that is to say a small forehead flap and alar flaps from the cheek. The above, of course, may have to be modified owing to the presence of extensive scar tissue.

The Question of Lining Nasal Flaps.

The necessity for some form of covering other than scar tissue presenting internal to the nasal cavity is generally admitted. I endeavoured to overcome this difficulty by removing the entire periosteum, and I think failure was often due to a mild septic infection. The argument as to the delay in healing over bare bone is, I think, counterbalanced by the fact that the slower the growth of the scar the better the result. Whether the whole of the skin flap should be epithelium or part epithelium and part covered with mucous membrane remains to be seen.

Resemblance to Former Organ.

I have had not only the advantage of a skilful sculptor Mr. Edwards—but also the invaluable services of Professor Tonks upon these points. However ideal it may seem, at

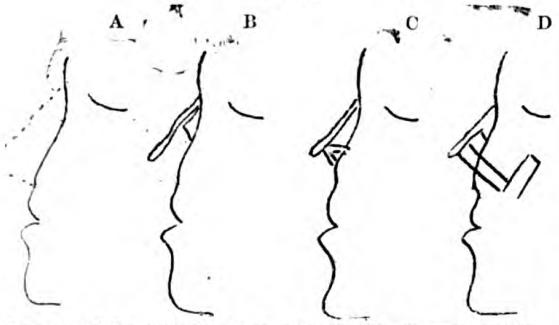
no matter how much one falls short of this ideal, I feel certain that it is advantageous, and its employment will assist us in the near future in producing fairly constant and satisfactory results. In the first case (Fig. 2) I made the most accurate calculation as to skin and cartilage from sections of the sculptor's model, and, but for the inevitable accident of partial sepsis, the result would probably have been a faithful copy.

The Supporting Framework.

Should these be cartilage, bone, or a combination? I am in favour of all cartilage framework. Cartilage will attach itself to bone exactly as bone will to bone, and the resistance of cartilage to mild sepsis is an argument in its favour, and, further, we know that cartilage remains a constant, whereas bone unattached is prone to disappear.

Possibly, in the near future, the exact supporting structures of the nose may be copied in their entirety, but for the present we must be content with other methods. In Fig. 1, A represents the artist's model; B, what I designate the "diving-board" principle of support—that is to say, the bank represented by one or more layers of cartilage, and the spring-board the overhanging cartilage. The bank portion of this principle is an essential to success, and whether built up by turning down a skin flap or by turning up the turbinate bones by Seccombe Hett's method is a matter of choice. The essential to success is, that in some form or

FIG. 1.



Diagrams of the supporting framework for the new nose. A, The sculptor's model. B, The diving-board principle. C, The road-stop principle. D, The diving-board and swung septum.

other, the prominence due to the lost nasal bones must be reproduced. Without support to the free end of the "diving-board"—viz., the cartilage—only indifferent success will be attained. Fig. 1 C represents the trestle principle with lateral supports. Where lateral supports are used, in order to be certain of any success, they have to be made of considerable strength. Personally I am now in favour of D, the septal support swung forward where possible or the alternative of a new septum as recommended in Holmes's "Surgery" 50 years ago. I have in mind an excellent rigid septum made by Lieutenant Seccombe Hett. He dissected up two flaps of mucous membrane, between which he inserted a mass of cartilage 2 in. by 1 in. by ⅛ in. which I dissected from the eighth costal. If this can be done at the same period at which the other cartilage is inserted under the skin, then I think a great deal will have been attained.

The preparation of the skin area upon which the new nose is to be embedded. Great care must be given to this stage, and it is advisable to undercut the skin and tissues in order to contract the opening and bring healthy new tissues into the region for this purpose. Re-formation of the lip is frequently necessary.

Illustrative Cases.

CASE 1.—The photograph (Fig. 2 A) shows the case of a man with total loss of nose, right eye, and middle portion of his lip. In this case the cartilage shaped was introduced beneath the periosteum and the whole turned down and fixed in proper position at one operation. If the first photograph is referred to the amount of scar tissue to be dealt with can be readily seen. I formed the new lip at a separate operation, but a mass of scar tissue remained into which the new nose had to be implanted.

The second photograph (Fig. 2 B) shows the new left ala and lip which were made from a cheek flap. A portion of the right ala still remains to be formed, the wrinkles under the left eye can be removed, and the right lower eyelid raised. The hollow, sunken appearance of the right eye will be seen to have been overcome in the second photograph. This I brought about by the introduction of my cartilage sphere.[1] The man has considerable movement with the glass eye. Many other records and details of this case can be seen at the Queen's Hospital. There is no nasal stenosis.

CASE 2.—This illustrates a method of building the new nose upon the shoulder and transferring the same temporarily attached by a long pedicle. If this method succeeds it has the following advantages: absence of forehead or face scars and time.

Oct. 15th, 1917: I introduced the cartilage under the skin—one piece about 2½ inches long to form the main support and two lateral pieces at right angles and underneath the same. These are shown in the diagram Fig. 4 (1 and 2). The diagram, Fig. 4 (3), also shows the shape of these cartilage pieces. On Nov. 12th I performed the second stage of the operation in conjunction with Lieutenant Seccombe Hett. This consisted in separating and undercutting the pedicle from A to B and sewing it together tube fashion, Fig 4 (2). Between B and C below the skin was incised and undercut to the upper B and C, and an epithelial graft was introduced upon rubber. The raw surface between AA and BB was undercut and drawn nearer together, leaving an inch of raw surface.

The objects of this portion of the operation were: firstly, to provide the necessary lining for the nose, secondly to render the pedicle as free from granulation and suppuration as possible by folding it together, and, further, by partial detachment to favour the blood-supply in the right direction. The transfer to the correct position will, if all goes well, take place in about three weeks.

The further notes on this case denoting either success or failure will be supplied by Major Gillies and Lieutenant Hett, in whose able hands I must now leave the case.

Photograph 1 (Fig. 3 A) shows the condition of the wound prior to operation. The condition of the upper lip will be noted and the position of a remnant of the right ala. Above the ala was a mass of displaced nasal bone which I removed.

Photograph 2 (Fig. 3 B) shows the ala now in the middle line. The new thick upper lip was formed by swinging a mass of tissue over towards the left side. This photograph also shows a prominent turbinate bone which had been advanced by Lieutenant Hett. The reduced area of skin opening will be noted, as also the established air passages.

Some Points in Treatment.

There are certain general matters and points of treatment to which I will now refer.

Preliminary treatment of patients.—In the first place, it is essential to get the patient as fit in general health as possible, and no time is lost by paying the most minute attention to the condition of the surrounding parts. The next all-important question is the establishment of the nasal passages, which must be thoroughly carried out.

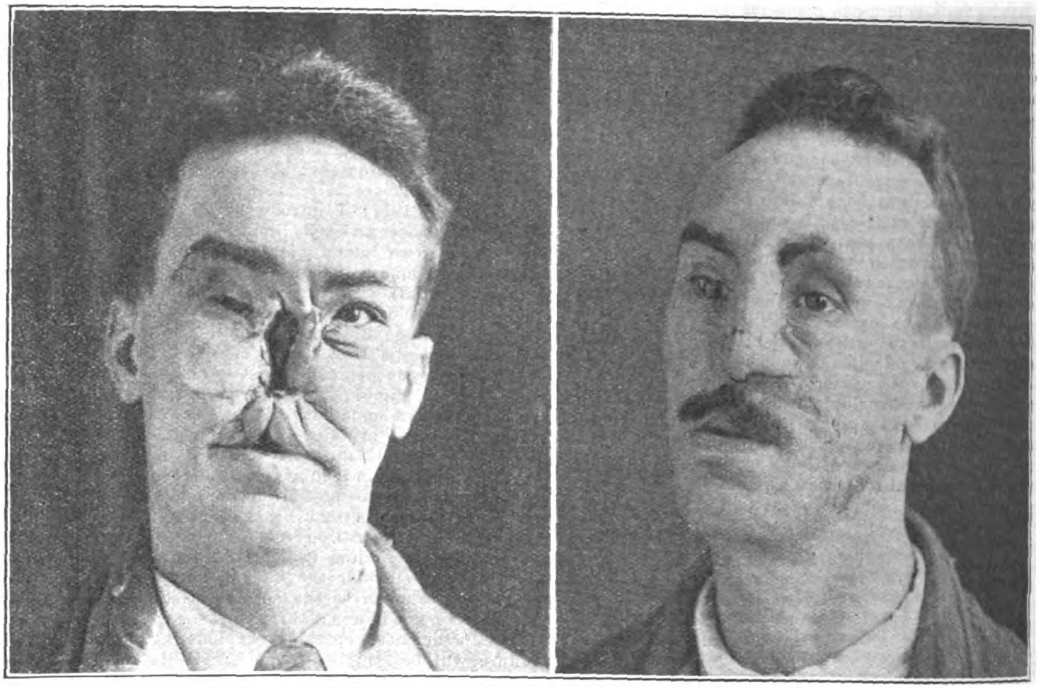
Common sources of trouble are suppurating lacrymal sacs, antrums, sequestra, portions of nasal bones embedded in the cheeks, and the condition of the patient's teeth. This possibly entails several preliminary operations.

Removal of cartilage —Either the operating surgeon should first remove the costal cartilage (eighth) left or right, and close up the wound before proceeding to the head work, or an independent surgeon should do this part. But to avoid infection there must be no going back for further cartilage without a complete clean-up and change of everything, including instruments. The theatre sister must be also carefully watched. By failure to carry out the above régime very strictly I alone am able to account for one or two septic chest wounds. It is our principle to secure very carefully the chest wound with four or five deep silkworm mattress sutures and a long blanket horsehair upon the edge. There is, however, one caution to be added. Watch very carefully the chest wound. If undue tenderness or rise of temperature occurs, at once take the precaution to remove a suture. This may at once localise the trouble.

Dressings.—Like most surgeons, I look upon dressings as of little value other than for protection. The patient may put his hand up if not most carefully watched, and in this country, where the importance of the value of properly fly-proof wards is not fully recognised, infection may readily

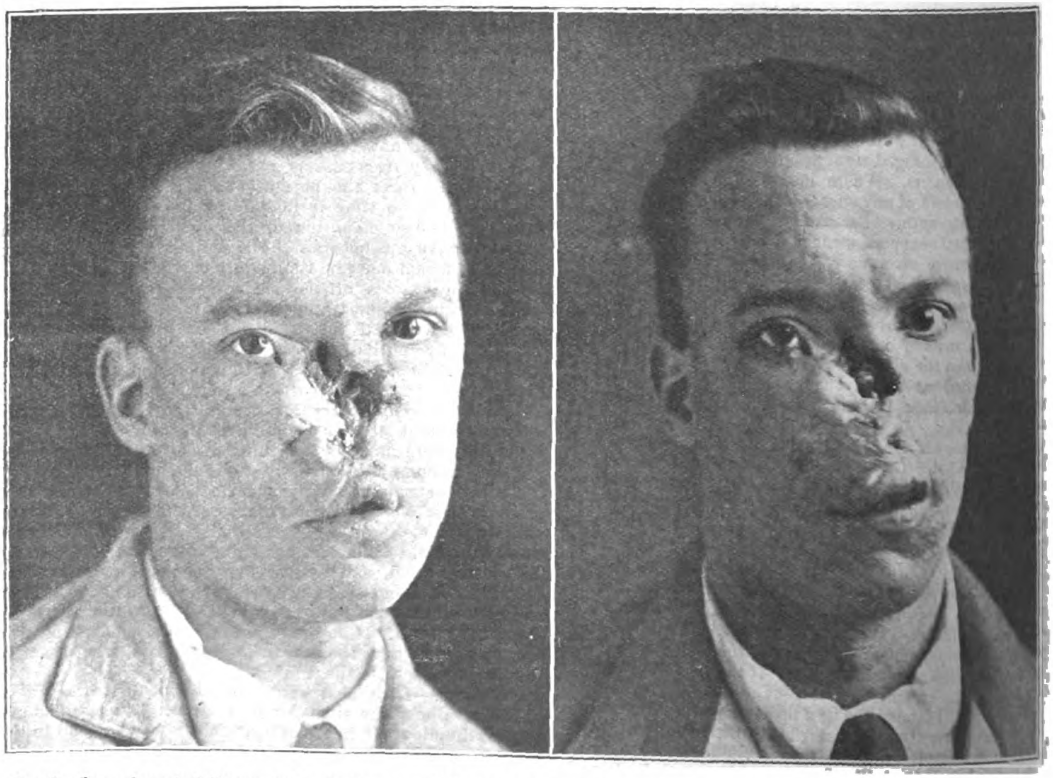
[1] THE LANCET, 1917, ii., 644.

FIG. 2 A. FIG. 2 B.



Case 1.—Total loss of nose, right eye, and middle portion of lip. Reconstruction of the nose by means of (1) a small forehead flap, and (2) alar flaps *rom* the cheeks. Formation of a new lip. Introduction of cartilage sphere into eye socket.

FIG. 3 A. FIG. 3 B.



Case 2.—Loss of most of the nose with displacement of the right ala, and disfigure nent of upper lip. The new thick upper lip has been formed by swinging a mass of tissue over to the left side. The turbinate bone has been advanced. The nose will be reconstructed by a shoulder flap with long pedicle (Cf. Fig. 4).

follow from this cause. For this reason only I use ambrine wax with an addition of 50 per cent. paraffin, and sometimes also a light gauze dressing.

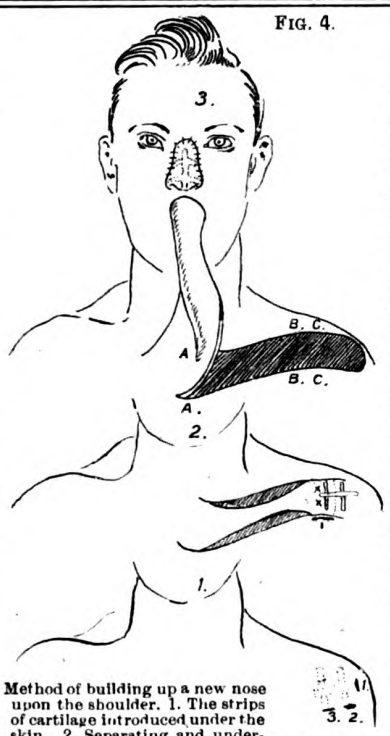
Sutures.—This question I have fully dealt with recently in THE LANCET (1917, ii., 347), and to this article I must refer my readers.

Subsequent treatment.—Irrespective of the few minor operations which may be necessary to complete the case, the question of mechanical treatment arises. Can the nose be straightened or the skin condition improved by any method of pressure? I have given this question considerable attention, and the conclusion I have arrived at is that mechanical pressure is useless. A puffy condition of the skin may be so compressed that for an hour or so after the removal of the appliance a satisfactory appearance is maintained, but subsequently the former condition supervenes. Massage I look upon as of the greatest value.

Lastly, let me say that I consider a complete loss of nose one in which the soft parts and bony structures up to the frontal process are absent. Every other so-called total loss of nose must be discounted. As the result is proportionate to that which is left—for instance, where the nasal bones are merely driven in and depressed—the problem is much simplified. Where one or both alæ are present also an advantage may be gained by their use.

In conclusion, I must apologise for bringing two cases forward which are incomplete, but my return to South Africa compels me either to do so or delay for a considerable period any publication. Current work, however, at the present time, whether successful or otherwise, seems to me so important that hardly any excuse would appear to be necessary.

FIG. 4.



Method of building up a new nose upon the shoulder. 1. The strips of cartilage introduced under the skin. 2 Separating and undercutting the pedicle, and sewing it together tube-wise. 3. The flap in position.

Nature's Plastic Surgery.

There can be no wish on the part of the profession in general or the plastic surgeon in particular, either intentionally or unintentionally, to magnify or minimise the value of work done. The plastic surgeon is no further responsible for the above results than that he has exercised his up-to-date knowledge of the treatment of jaw wounds.

The man who in this stage deserves all the credit which may be bestowed upon him is the dental surgeon, who by his ingenuity and skill holds the fragments of the jaws together in good articulation. The point of interest to all surgeons when examining critically the work of the plastic surgeon is to discard the first photograph, but to examine carefully the one depicting the result of Nature's efforts prior to operation. Fig. 5 shows such a result of Nature's plastic surgery. No treatment was applied between the periods at which the two photographs were taken, with the exception of a dressing with No. 7 paraffin—the War Office substitute for ambrine—as suggested by Major Gillies.

To give a photograph of the original condition of the patient and to miss out this photograph is, from my point of view, more than misleading. To the experienced plastic surgeon some of the largest facial wounds which appear sensational before and behind the camera present few difficulties by the time Nature has completed her part. The plastic surgeon only wishes for credit for his subsequent work.

FIG. 5 A. FIG. 5 B.



Illustrating Nature's plastic surgery. No treatment was applied between the periods at which the photographs were taken with the exception of dressings with No. 7 paraffin (War Office substitute for ambrine).

THE USE OF THE TURBINALS AND THE SEPTUM IN THE REPAIR OF INJURIES AND DEFECTS OF THE WALL OF THE NASAL CAVITY.

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THE middle and inferior turbinals and also the septum nasi have proved very useful in the author's experience for the repair of damage to the nose due to war injuries. The inferior turbinals have also been found to be excellent for the repair of wounds in the floor of the nose causing perforations through the palate.

In the experience of every rhinologist adhesions between the septum and the turbinals are very ready to form if there is an abrasion of contiguous surfaces in the nasal cavity. Even without actual contact, blood clot seems able to become organised and promote an adhesion between adjacent abraded mucous membranes. Such adhesions form only too readily after intranasal operations, and it is difficult to prevent them re-forming when once established. Furthermore, the vitality of the turbinals is great owing to their vascularity, and they are able to persist and to form new attachments, even when surrounded with muco-pus.

Perforations of the Floor of the Nose.

Early in 1916, in a case of gunshot wound of the nose with perforation of the anterior portion of the hard palate, I detached the anterior end of the left inferior turbinal and pushed it down into the cavity, which it filled and formed a sound watertight plug. This was done at the late Lord Lucas's Hospital for Soldiers at Wrest Park. During the same year Major Gillies independently made use of the turbinals for the repair of the walls of the nose.

Technique.—The attachment of the inferior turbinal is cut through for the requisite distance and, the margin of the perforation having been freshened, the turbinal is pushed backwards and into the perforation. A circular cut is made in the mucous membrane of the turbinal where it protrudes into the palate, and it is then stitched in position by several horsehair sutures, the raw areas of turbinal and palate being co-apted.

When firmly attached to the palate the turbinal can be severed entirely from its connexion in the nose. This latter procedure may be necessary from two points of view, one being to prevent the possibility of nasal obstruction, the other being that if, although adherent to the palate, the perforation is not entirely obliterated, the intranasal portion of the turbinal can be pushed further into the perforation, so as completely to fill the latter.

In cases where the perforation was at the junction of hard and soft palate, I have first detached the posterior end of the turbinal and fixed this to the posterior margin of the perforation, and subsequently when the blood supply of this attachment was established I then detached the anterior portion and pushed the turbinal bodily backwards and downwards into the perforation so as to close it. (See Diagram A.) Lastly, a free turbinal graft may be taken and used to fill up the gap, but I do not think this method is as safe as the former.

Destruction of the Ala.

In one case (Case 1), where the right ala nasi had been destroyed, I employed the free turbinal graft to form a support for the new ala. In this case the anterior portion of the inferior turbinal had been destroyed as well as the ala. I therefore removed the anterior half of the left inferior turbinal and attached it anteriorly to the septum and posteriorly to the junction of the nasal floor and outer wall of the nose. It formed attachments and lived. A fortnight afterwards I turned a skin flap from the cheek and covered it over, having previously removed the mucous membrane from its other side. This combination formed a good ala, although a somewhat rigid one. (See Case 1 and diagrams.)

FIG. 1A.



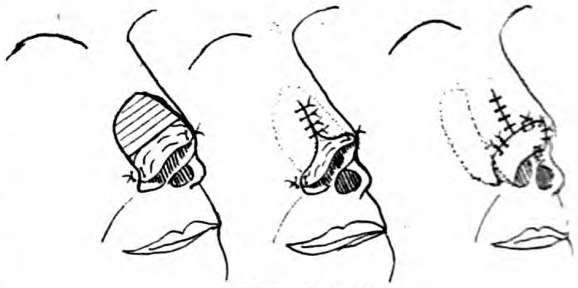
Case 1.—Before operation.

FIG. 1B.



Case 1.—After operation.

FIG. 1C.



Diagrams of Case 1.

Wounds of the Bridge.

In cases of loss of the upper part of the bridge of the nose the middle turbinals are useful in filling up the hole and also in combination with the septum they can be made to form a support for the skin flap which is subsequently brought down to cover over the gap. They also have the advantage that the mucous membrane of their deep side can be left and thus form a mucous membrane lining as well as a support for the overlying skin flap.

Technique.—The middle turbinal is detached posteriorly by cutting through its line of attachment with a saw or a spokeshave. The cut stops within ¼ inch of the anterior end. The turbinal is then swung round so that its posterior end protrudes through the opening in the nose. The turbinal is now laid transversely across the gap, resting on the remains of the septum if present, or joined to the middle turbinal of the opposite side which has been treated similarly. In this latter case the posterior end of both turbinals are rawed and sewn together, so as to form a pent-house.

If the gap is more extensive the inferior turbinals may be similarly treated so as to form a double pent-house, all four turbinals being attached together after their adjacent surfaces have been rawed. This double pent-house forms a solid mucous-lined support for the subsequent plastic operation, and if, as is often the case, further prominence is required, it is no bar to the use of a rib-cartilage graft in the skin flap, which is subsequently brought down. (Diagram B.) In cases where a portion of the septum has been destroyed in the above injuries, a turbinal may be superimposed upon it, so as to restore the partition. (See Case 2.)

Total Loss of Nose.

As mentioned in the section on palatal perforations, a turbinal may be first semi-detached and its posterior made to form a new attachment, and subsequently its anterior end may be cut free and advanced to a new position. This was found useful in a case of destruction of the whole nose with great loss of tissue on the left side due to destruction of the nasal process of the left superior maxilla.

In this case the middle turbinals were twisted forward as previously described. The remains of the septum were partly detached by a cut passing horizontally backwards along the floor of the nose, which then curved upward towards the roof. A pear-shaped piece of septum was thus obtained attached by a pedicle above. It was turned sideways and stitched to the left middle turbinal which was twisted downwards. The lower end of the left middle turbinal was attached to a piece of turbinal below, which had previously been brought over from the right side. The posterior end of the right middle turbinal was attached to the right (originally anterior) margin of the septum. Subsequently the anterior end of the right middle turbinal was detached and brought down to the floor of the nose to the left of the middle line.

FIG. 2A.



Case 2.—After operation; first stage.

This mass of turbinals and septum forms a very solid support and covering for the cavity and has helped materially to fill up the large area of the wound (4 inches across at its widest part). The patient is now able to blow his nose for the first time since receiving his wound. (See Case 3 and diagrams B and C.) In this case the septum was turned laterally to cover over the greatest possible space. In other cases the septum flap has been cut to give support and prominence to the bridge or to support the columella by the incisions. (See diagrams C 1 and C 2.)

FIG. 2B.



Case 2.—Before operation.

FIG. 3A.



Case 3.—Before operation.

In one case where the septum had been mainly destroyed, the maxillary crest together with the remains of the septum was swung forwards and upwards from its base and attached to the anterior end of the right inferior turbinal — the latter was detached posteriorly and its posterior end swung up and attached to the under side of the remains of the nasal bone. Thus a continuous support, consisting of maxillary crest, cartilage, and some of the turbinal covered with mucous membrane, was obtained which was firm enough to hold up the bridge of the nose. (See Case 4 and diagrams.)

DIAGRAM B.



To illustrate the method of advancement of the middle and inferior turbinals.

DIAGRAM A.



To illustrate the use of the anterior and posterior ends of the inferior turbinal to fill up traumatic perforations of the floor of the nose.

Loss of Nasal Supports.

In a case of perforating wound of the nose in which the external wound had closed, there was depression of the bridge with undue prominence of the tip together with nasal obstruction. I did a submucous resection, removing most of the bowsprit so as to depress the tip. The removed piece of cartilage was divided into three equal quadrilateral pieces. The skin over the upper part of the bridge was separated by a tenotomy knife and the three pieces of cartilage were inserted superimposed to do away with the depression. (See Case 5.)

In a similar case (L. B., Brook-street), after closing a hole in the upper part of the bridge by one frontal and two lateral flaps, the patient was still left with the same deformity as in the preceding case. In this case I subsequently did a submucous resection and by means of a tenotomy knife introduced between the flaps, was able to free a passage up to the skin of the bridge. The septum was then replaced and pushed up under the skin of the bridge. This was possible owing to destruction of the nasal bones. It improved the profile considerably. (See Case 5.)

FIG. 2C.



Case 2.—Before operation.

I do not intend to suggest that this use of the septal cartilage will replace the use of costal cartilage as a means of rebuilding the bridge of the nose in cases of rhinoplasty. Where a nose-flap from the forehead or chest is required for the formation of the whole or of the greater part of the nose it is obviously not applicable, as in such cases a rib cartilage graft in the flap is necessary. Again, in many cases of partial loss of the nose where the above measure is unnecessary, there is often not sufficient septal cartilage available and a subcutaneous rib graft on the diving-board principle frequently gives the best results.

Heterogeneous Septal Cartilage Grafts.

In certain cases the alæ and tip of the nose sink in owing to destruction of the septal cartilage, while the nasal bones and lateral support of the nose remain. This may be seen in cases of forcible blows on the nose with subsequent suppurating hæmatomata of the septum. Where the soft tissues of the septum remain intact it is possible to introduce a septal cartilage removed from a case of submucous resection and to insert it into the place of the one destroyed, and so reproduce the proper contour of the tip.

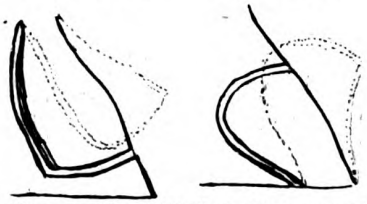
FIG. 3B.



Case 3.—After operation; first stage.

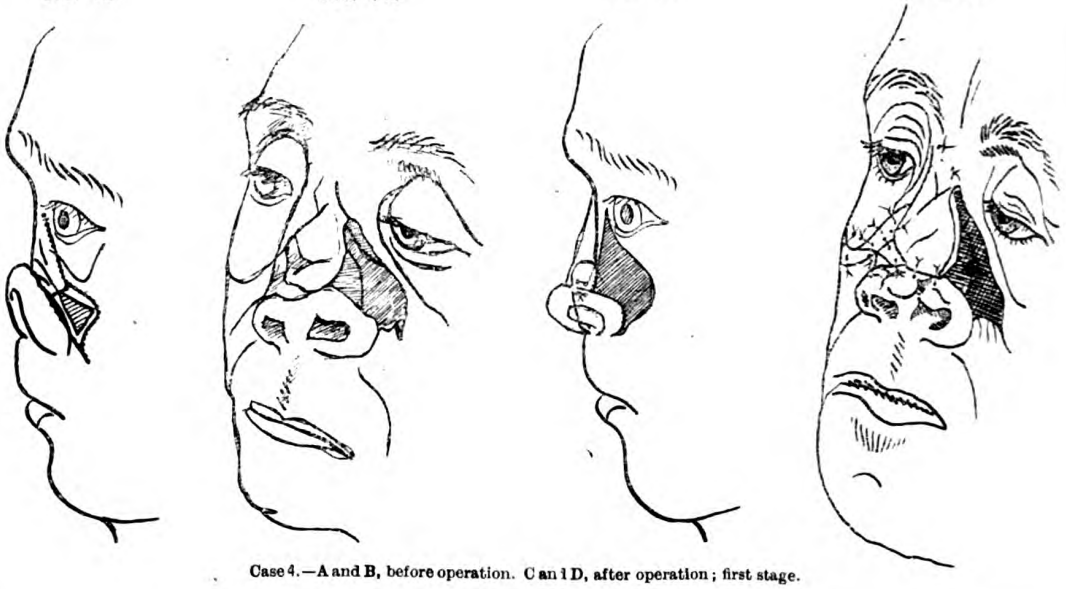
An incision is made through the columella and carried between the two sides of the remaining fibrous septum. The thumb and finger placed in the vestibule guide the knife, and the incision is carried back to the bony septum and up to the central ridge of the nose, just underneath the skin. Great care has to be taken, as, of course, a perforation will spell failure, and there is no chance of separating the sides of the septum except by a knife. The free heterogeneous cartilage is then inserted, the incision in the columella sutured, and the case treated as one of submucous resection.

DIAGRAM C 1. DIAGRAM C 2.



Diagrams C 1 and C 2, illustrating upper and lower septal swings.

FIG. 4 A. FIG. 4 B. FIG. 4 C. FIG. 4 D.



Case 4.—A and B, before operation. C and D, after operation; first stage.

My experience of heterogeneous septal cartilage grafts is not yet sufficient to make a statement of their success. Instead of using a heterogeneous graft to reproduce a septum which has been destroyed, a new septum may be formed from the patient's costal cartilage and introduced in the manner described above. I used this with good cosmetic result in Case 7 (see notes of case).

The Use of the Septal Swing.

Besides the use of the septal cartilage in bringing up the prominence of the bridge, by taking it out by submucous resection and placing it under the skin of the nose, as was done in Cases 5 and 6, there are two other methods by which it may be made useful. This is by the method of septal swing, either upwards, downwards, or laterally. Diagrams C 1 and C 2 illustrate this.

FIG. 5 A.



Case 5.—Before operation.

In the case of the upward swing the septum is cut backwards along the floor at the junction of the maxillary crest. The cut is then continued upwards towards the roof of the nose and the septal flap, including cartilage and mucous membrane, is swung forwards. Remaining attached by a pedicle above, it is retained in position by advancing the two middle turbinals, so that a pent-house supports the partition. This is useful for producing a prominence due to loss of tissue of the upper part of the bridge. (See Case 3.)

The reverse of this is done for the lower septal swing. The cut is made backwards, downwards, and forwards, and the septal flap tilted forwards, remaining attached to the floor of the nose. This is useful in cases of the pug-nose type, where the alæ sink in, so that the external nares approximate more to the vertical than to the horizontal position. (See Cases 4 and 7.)

Lastly, in loss of one side of the nose the septum may be swung outwards by means of a horizontal cut along the floor of the nose and two parallel cuts carried at right angles to this up to the bridge. (See Case 1, Fig. 1 C.)

Conclusions.

As a result of my attempt at building up the nose from the inside I have come to the following conclusions:—

1. The turbinals and the septum are capable of being advanced into new positions to form fresh attachments and continue to live.

2. The advancement of the turbinals is a useful procedure in the cases of loss of the whole or part of the nose.

3. The upper septal swing is useful as an aid for supporting the new bridge of the nose.

4. The lower septal swing is often required in the pug-nose type. In these cases the septum may be sometimes swung forwards and downwards with the tip of the nose and alæ attached, and help to retain the latter in their new position. The lateral septal swing may be used to form a support for the side of the nose.

5. The septal cartilage after removal by submucous resection may be used as a free autogenous graft for increasing the prominence of the sunken bridge or for a nasal support. Heterogeneous septal cartilage graft may be used in the same way as an autogenous cartilage graft to restore the contour of a sunken nose, to elevate a tip or raise a bridge by using it to form a new septum nasi.

FIG. 5 B.



Case 5.—After operation.

Illustrative Cases.

CASE 1.—Corporal H——, patient at the Hospital for Facial Injuries, Brook-street. The lower half of the right side of the nose had been destroyed, including the right ala, by gunshot wound. (Fig. 1 A.) The mucous membrane of the right half of the cartilaginous septum was separated. It was incised by three cuts, leaving it attached below as in the

FIG. 6A.



Case 6.—Before operation.

FIG. 6B.



Case 6.—Before operation.

FIG. 7A.



Case 7.—Before operation.

diagram. The cartilage with its left half of mucous membrane was then cut through, leaving it attached above. The cartilage was then swung over and attached to the edges of the wound which had been previously freshened. The right inferior turbinal had been partially destroyed. The anterior half of the left inferior turbinal was removed and placed across the gap below the septum in the position of the ala. It was attached to the tip of the nose and to the junction of floor and outer wall of the nose. The cartilage was covered by undercutting and advancing skin over it. A fortnight later a cheek flap was turned down and attached over the turbinal from which the mucous membrane of the outer side had been removed. The side of the nose had therefore both a mucous lining and a support. The case did well, and the patient can breathe well through the nose. (Fig. 1 B.)

CASE 2.—Private H——, at the Queen's Hospital, Frognal, Sidcup. Gunshot wound of left, and bridge of nose. (Fig. 2A and B.) The left eye had been removed, the upper half of the nose had been destroyed, and there was nasal obstruction.

First operation.—Removal of adhesions between both middle turbinals and septum. Removal of sequestrum from the neighbourhood of the opening of the right frontal sinus.

Second operation.—The right middle turbinal was detached posteriorly, its anterior attachment being left. The turbinal was swung forwards and downwards, and superimposed upon the septum to which it was attached. It grew in this position, thus forming a support for the skin flap, which will shortly be brought down to cover the gap.

CASE 3.—Lieutenant S——, the Queen's Hospital, Frognal. In this case the whole nose was destroyed by gunshot wound. In addition the wound extended to the left with destruction of the nasal process of the superior maxilla. Major Gillies had previously placed a costal cartilage graft on the forehead and a portion of the left inferior turbinal had been advanced. (Fig. 3A.) There was a very wide gap in the face and it was thought advisable to try to cover this up to some extent by turbinal and septal advancement.

The right and left middle turbinals were swung downwards and forwards. The upper septal swing was used, but instead of supporting the swung-forward septum in the usual pent-house manner, the septum was turned sidewards, so as to cover over as much space laterally as possible, and the turbinals attached as shown in the diagram. The mass of tissue has lived and hypertrophied and now forms a hypertrophied and raspberry-like mass very nearly filling up the cavity. (Fig. 3B.) This patient will soon be ready for bringing down the new nose. He can now for the first time since the injury blow his nose.

CASE 4.—Private C——. Wounded May 2nd, 1917. Admitted (from a General Hospital, France) Sept. 23rd. Condition (Oct. 3rd): The bridge of nose was flattened and sunken in, due to loss of nasal bones and the majority of the nasal septum. The flattening was more marked on the left side owing to the destruction of the nasal process of the maxilla. There was an opening into the nose in this position. The soft tissues of the bridge of the nose were reduced to a mass of scar tissue. The alæ had sunken in so that their lumen was vertical.

Operation.—Oct. 3rd; Lieutenant Hett. A transverse incision was made just above the alæ, and these were turned down into their normal position. A piece of maxillary crest and remains of septum was turned upwards and forwards from the floor of the nose. This was attached to the anterior end of the right inferior turbinal. The inferior turbinal was then turned upwards and its posterior end attached to tissues at the base of the nose. This was so arranged that the turbinal and septum graft formed a continuous bony and cartilage rod covered with mucous membrane, which was found to form a sufficiently firm support for the bridge. A cheek flap was cut which, together with a flap of healthy skin from the base of the nose, was of sufficient size to be joined to the right ala and form the right half of the nose. The left half of the nose was left widely open for drainage, as the left maxillary antrum was found to be unhealthy. It is intended to turn in the scar tissue of the left cheek and to cover it with a forehead flap containing cartilage if necessary.

FIG. 6C.



Case 6.—After operation.

FIG. 6D



Case 6.—After operation.

FIG. 7B.



Case 7.—After operation.

FIG. 8 A.



Case 8.

FIG. 8 B.



Fig. 8 B (Case 8).—Before operation; first stage.

FIG. 8 C.



Fig. 8 C (Case 8).—After operation; first stage.

CASE 8.—Private R. C——, aged 19. Admitted Sept. 3rd, 1917. Destruction of the greater part of bony superstructure of nose, including greater part of the nasal bones and the nasal process of the superior maxilla. The alæ of the nose were present. There was a hole about the size of a threepenny-piece above the ala. The alæ had the usual vertical displacement (pug-nose type).

Operation.—Oct. 12th; Lieutenant Hett. First stage of restoration of bridge. Transverse cut above the alæ. The alæ brought down into horizontal position. The margins of the perforation cut away and the soft tissues of the nose turned over to the left. The remainder of the septum was swung forward and stitched to the underlying soft parts, so that the prominence of the bridge was to some extent restored. A large opening was left in right half of the nose. (Fig. 8 A, 8 B, 8 C.)

CASE 9.—Rifleman T. H——, aged 32. Wounded May 27th, 1917. Admitted July 11th. Transferred to Queen's Hospital August 21st. Shrapnel wound left side of face. Left half of nose absent. Antrum open on face. Opening from floor of antrum through gingivo-labial fold. (Fig. 9 A.)

Operation.—Sept. 27th; Lieutenant Hett. Opening between the antral cavity and the mouth was closed by raising the antral mucous membrane round the opening and closing the edges by silkworm-gut sutures. The upper lip was everted, and the mucous membrane of the alveolus and inner surface of upper lip was also sutured together by horsehair sutures. The left middle turbinal was detached posteriorly, twisted forwards, and its posterior end attached to the anterior portion of the floor of the nose so as to form a support for a subsequent plastic operation on the nose. The right ala nasi was adherent to the septum by adhesions. The ala was partly detached below and the adhesions removed and a tube inserted into the right nasal cavity, thus establishing the patency of the right nasal passage.

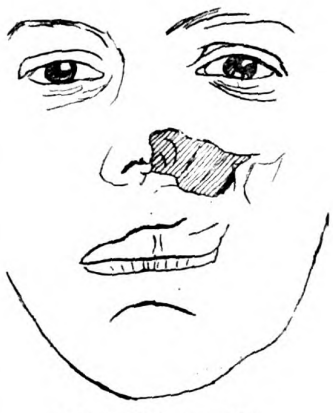
CASE 5.—This patient had sustained a gunshot wound which penetrated the base of the nose and necessitated the removal of the right eye. The external wound of the nose had healed so that there was no perforation at the time of examination. There was considerable sinking in of the upper part of the bridge. This caused an appearance of undue prominence of the lip and produces the typical bird-beak deformity. (Fig 5 A.)

Submucous resection of the septum was done and several intranasal adhesions cleared. The purpose of the operation was two fold: (1) to remove the nasal obstruction; (2) to obtain a septal cartilage graft. After its removal the septal cartilage was divided into three equal quadrilateral parts. These were inserted superimposed under the skin of the upper part of the bridge, through an opening made by a tenotomy knife. The submucous resection was carried as nearly as possible to the tip of the nose so as to try to depress the latter. (Fig. 5 B.)

CASE 6.—Private S——, a patient at the Hospital for Facial Injuries, Brook-street, was admitted with a gunshot wound through the upper part of the bridge of his nose. There was an opening into the nasal cavity in this situation. (Figs. 6 A and B.) When the wound was clean a flap of scar tissue was turned across the opening so as to cover it up. A skin flap was turned up from the root of the nose and by undercutting and prolonging incisions in the line of the eyebrows a sufficient length of skin was obtained to cover over the gap and be sutured to the lower margin of the wound which had been previously freshened. Two lateral flaps were cut and were stitched to the margins of the median flap.

A fortnight later a submucous resection of the septum was performed and the cartilage removed. Some adhesions in the upper part of the nose were cleared away. A tenotomy knife was introduced between the submucous resection flaps and carried up to the bridge of the nose just underneath the skin. The septal cartilage was then reintroduced, but with its long horizontal axis vertical. This was done in order to give greater prominence to the bridge and to prevent flattening of the nose.

FIG. 9 A.



Case 9.—Before operation.

FIG. 9 B.



Case 9.—After operation; first stage.

CASE 7.—Private C——. This patient received damage to the face while serving in France by a kick from a horse. As a result of this the septal support for the nose sloughed out and also some of the lateral support. The nasal bones remained. As a result of the injury, the nose drooped and fell in from the middle of the bridge to the tip, causing a marked prize-fighter type of face. (Fig. 7 A). It was found on examination that the whole of the septal cartilage and part of the vomer were missing and the soft parts of the septum had healed and were intact.

Operation.—An incision was made down the mid-line of the columella from the tip of the nose down to the junction of the columella with the upper lip. This was deepened by a short tenotomy knife and the soft tissues of the septum were separated backwards until the remains of the vomer were met with. The division was continued upwards and forwards just under the skin of the bridge and tip. The two sides were separated also down to the floor of the nose in the same manner. By proceeding carefully with blunt and sharp-sided tenotomes aided by inspection of the inside of the nose, it was found possible to complete the separation without making a perforation into the nasal cavity.

Meanwhile Captain Aymard had exposed the eighth costal cartilage on the right side. He removed a quadrilateral piece of cartilage rather larger than the normal cartilage of the septum and about the same thickness. I then cut this into shape so that it fitted tightly between the septal flaps. The usual submucous resection plugs were then inserted and kept for 24 hours. Fig. 7 B shows the condition after operation.

Addendum on the Use of Cartilage Grafts.

Since writing the above I have experimented further as regards the making of a new septum nasi from an autogenous costal cartilage graft. This has given very good results in reproducing the contour of a sunken nose. It is only applicable where soft tissues and mucous membrane of the septum remain. The technique employed is the same as that quoted in Case 7. I have also employed this method in a modified way to support a columella and to make a new nasal spine where the latter was required to restore the contour at the junction of the upper lip and nose. The reproduction of the septal support in making a new nose is, in my opinion, of great importance in order to produce a natural appearance and to prevent subsequent falling in of the organ. In cases where both the soft parts and cartilage of the septum are destroyed the following method is under trial:—

The mucous membrane of the floor of the nose is raised with an elevator and two flat pieces of cartilage are inserted under it. After an interval they are raised with their covering of mucous membrane, but their anterior attendants are left, they are then rotated forwards, their raw surfaces are coapted, and their free ends are attached to the under surface of the new nose, which has been brought down from the forehead.

This method is designed to produce prominence and prevent subsequent falling in of the nose.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Scopolamine-Morphine Narcosis in Child-birth (Twilight Sleep).

A MEETING of this section was held on Dec. 6th, Captain G. F. BLACKER, the President, being in the chair.

The discussion was opened by the reading of the papers forming the report of the committee appointed to investigate the effects of scopolamine-morphine narcosis. The observations were carried out independently. A standard solution of scopolamine was employed, the initial dose being morphia gr. ¼, scopolamine gr. 1/150. Subsequent doses consisted of scopolamine gr. 1/450. The patient was isolated during labour, and, as far as possible, precautions were taken to avoid sensory impulses. The cases were selected by the officer in charge of the ward, and the patients were preferably primiparæ in whom no complications were anticipated. Two charts were drawn up for use in the labour-room, and at each injection observations were recorded, the results of which appear in the papers. Dr. EARDLEY HOLLAND was unable to take part in the report owing to absence on active service.

Reports of the Special Committee.

Captain HERBERT WILLIAMSON read a report on 20 cases under his care at St. Bartholomew's Hospital.

Dosage.—The initial dose of morphia hydrochloride gr. 1/4 and scopolamine hydrobromide gr. 1/150 was given when the cervix was dilated sufficiently to admit a finger, and, as a rule, when the pains were recurring regularly at intervals of not less than a quarter of an hour. One hour after the administration of initial dose, scopolamine gr. 1/450 was given, and 20 minutes later an object with which the patient was not familiar was shown to her. From this point onwards the memory test alone was employed. He thought the memory test a safe guide but not absolutely a reliable one, for there were instances in which apperception was present throughout, but amnesia was complete. It was the best guide to dosage that we possessed, but demanded considerable experience and powers of close observation in the administrator. Its value was diminished by the necessity of arousing the patient each time it was applied. Two alternative tests had been suggested—Babinski's reflex and the pupillary pain reflex. These were tried in all cases but were found of little value.

Effect upon the mother: Uterine contractions.—If the pains of the first stage were good before the administration was commenced, little effect was produced; if they were weak injections of the drugs sometimes led to their entire cessation. Their experience confirmed that of Krauss, that in uterine inertia scopolamine-morphine narcosis should be avoided, for under its influence the pains become weaker and sometimes cease entirely. In the absence of uterine inertia it was found that little effect was produced upon the strength, frequency, or duration of the contractions in the first stage. The second stage was markedly prolonged, especially amongst the primiparæ, due to the lack of voluntary expulsive efforts on the part of the patient, and in three of the cases to weakening of the uterine contractions. The third stage was prolonged, but there was no severe post-partum hæmorrhage. In three cases there was a temporary relaxation of the uterus four or five hours after delivery. A high percentage (45 per cent.) of the patients were delivered artificially. This was partly accounted for by the high proportion of abnormal labours, but Captain Williamson was of opinion that some of the patients in whom forceps were applied would have delivered themselves spontaneously had not the bearing-down efforts been present, and therefore that scopolamine-morphine narcosis increased the number of instrumental deliveries.

General effects.—There was no tendency to increase of the maternal pulse-rate, and in only 1 case were the respirations affected. Thirst was complained of by almost every patient. Nausea and vomiting were present in 4 cases. Distension of the bladder with inability to pass urine, necessitating the use of the catheter, was present in 6 cases. Flushing of the face and dryness of the skin were marked, but never caused much distress. Restlessness was common during the stage of induction. *Analgesia* was marked in 12 of the patients, slight in 5, and absent in 3. No definite relation could be traced between analgesia and amnesia.

Complete amnesia was attained in 11 cases...	=	55 per cent.
Incomplete ,, ,, ,,	4 ,, ...	=	20 ,,
,, ,, ,, absent	5 ,, ...	=	25 ,,

In these the whole course of labour was remembered.

Effects upon the child: Fœtal heart.—In 16 cases the fœtal heart rate was not affected; in four there was increased frequency which might have been due to the labour itself.

Condition at birth.—Nineteen of the children were born alive. One child was stillborn, but this was not to be attributed to the scopolamine-morphine narcosis. Of the 19 born alive, 8 were born in a condition of oligopnœa, undoubtedly due to the combined action of scopolamine and morphine. Most twilight sleep babies were born in this condition, and although it appeared alarming, it was transient and need not cause anxiety. No treatment was required beyond covering up the child and keeping it warm.

History of the children after birth.—Of the 19 children born alive, all left the hospital well. In the majority there was no evidence that the scopolamine had produced any effect upon the child. There was no evidence that it was excreted in the milk, several cases having been examined.

The puerperium and period of recovery were not affected adversely by the injections. After long and trying labours the twilight sleep patients made a quicker recovery than those who had been delivered without it. Lactation was not affected unfavourably.

Captain J. S. FAIRBAIRN read a paper giving his observations on 80 cases at St. Thomas's Hospital.

The usual *dosage* was used except in a few of the later cases, when a slight modification was made, the second injection being 1/300 gr. hyoscine instead of 1/450. Cases of normal labour were preferred. Administration was begun when pains were regular at about five-minute intervals and the os about two fingers, but it was difficult to be sure of the precise moment. Of the 80 cases 60 were primiparæ and 20 multiparæ. The number of injections varied from 1 to 19, the average being 6·5. In the primiparæ the average was 7·2, and in the multiparæ 5·5. The memory test proved quite useless. The behaviour of the patient between and during the pains and the notice she took of the prick of the needle were found to be more useful, and had the great advantage of involving no additional disturbance to the patient. Their method was to begin with hourly hyoscine injections, and when the drowsiness and absence of response to the pains injections, or other manipulations indicated that the woman was fairly narcotised to omit one or more of the hourly injections. *Amnesia* was classified as "complete" when the patient remembered nothing from the time of the first injection; as "partial" when she had no clear recollection of her labour, but retained some impression of the final expulsive pains; and "absent" when she was able to recollect the events and progress of her labour.

Complete amnesia was obtained in 36 cases...	=	45 per cent.
Partial ,, ,, ,,	26 ,, ...	=	32 ,,
Amnesia was absent in	18 ,, ...	=	22·5 ,,

Analgesia was considered as complete in all those cases in which complete amnesia was obtained, partial in those cases when the patient appeared to obtain relief from the injections and was satisfied that she had had an easy labour, and absent in those cases in which she did not seem to have had any relief.

Complete analgesia was obtained in 36 cases	=	45 per cent.
Partial ,, ,, ,,	40 ,, ...	=	50 ,,
No ,, ,, ,,	4 ,, ...	=	5 ,,

General effects.—No decided influence on the maternal pulse or respiration rate was observed. In 8 cases there was slowing of the pulse-rate sufficient to be noteworthy; in only one case was quickening recorded. Sleep between the pains was present in all but 3 cases, and in 27 there were periods in the labour when the pains did not rouse the patient. Mental confusion to some degree was present in most patients in whom narcosis was well marked. Restlessness to some degree was noted in 29 cases, and in many the result was good as far as amnesia was concerned. Thirst was present in 75 per cent. of the cases, vomiting in 20 per cent., and flushing of the face in nearly 90 per cent. Dilatation of the pupils was noticed in 21 cases, or about 25 per cent. No dangerous effects on the mother were observed.

As regards the *effect on labour* itself, there was a fairly constant diminution in the strength and frequency of the contractions after the first injection, sometimes lasting an hour or two, after which the uterine contractions appeared to follow their normal development. Bearing-down efforts were present in 55, feeble in 10, and absent in 15 cases. There seemed to be a tendency to delay in the latter part of the second stage, shown by the increase in the number of forceps deliveries, which were more than three times the average ruling in the ward. The placenta was expelled spontaneously in 41 cases and was expressed after expulsion from the uterus in 39 cases. Bleeding was stated to have been greater than normal in 9 cases, or 11·25 per cent. In 4 of these cases the bleeding was described as post-partum hæmorrhage. The cases seemed to indicate a slight tendency to increase of loss in the third stage, though readily controlled, but it was impossible to ascribe the hæmorrhage as due to the narcosis alone. The condition of the patient after delivery was good throughout, and no case of shock or other dangerous symptom, except the 2 cases of post-partum bleeding, was noticed.

Effect on the child.—There were 3 cases of still-birth, two of which were due to causes quite independent of the narcotism; in the third the fœtal death was due to delay in the after-coming head. In 19 cases the child did not breathe or cry spontaneously at birth, but in 9 of these the delay was so trifling as to be scarcely worthy of notice. In 6 cases external stimulation and in 3 a hot bath were sufficient to start respiration at once. Besides these cases, in 16 there was blueness of the child for the most part trifling in character and of slight duration. Regarding pituitary extract given before birth as a contributory cause of difficulty in starting respirations, it was thought not to add appreciably to the danger to the child. There were 3 cases of *cardiac disease* in one of which the patient had been in the medical wards for several weeks owing to failure of compensation. In all these cases the partial narcosis had a beneficial effect on the patient. Out of 13 cases in which a general anæsthetic was given at the end of the second stage, complete amnesia occurred in all but one, or in 92·3 per cent. If the pain of expulsion brings the patient to consciousness the amnesic effect is lost; probably all the 26 cases classed as partial amnesia and a proportion of those in which no amnesia was obtained would have been classed as complete had the actual birth been conducted under a general anæsthetic; but given for this purpose, the second stage would no doubt be prolonged and the number of forceps deliveries increased, but the percentage of complete amnesia would probably have been raised to 90 per cent.

Captain FAIRBAIRN also read a report on 20 cases from the General Lying-in Hospital, York-road, in which the results were in general the same as those obtained at St. Thomas's Hospital.

Dr. C. HUBERT ROBERTS read a report on 67 cases observed by himself and Dr. T. G. STEVENS at Queen Charlotte's Hospital.

Amnesia.—The results were good. In 90 per cent. the pains of labour were diminished; complete amnesia was obtained in 46·2 per cent., partial in 44·7 per cent. Analgesia was complete in 32 cases, partial in 31. There were 2 failures. Indications for commencing treatment were

the character of the pains, which should be regular and strong. The size of the os could not be taken as a guide.

Dosage.—The number of injections varied. Three patients had only one injection, whilst one had ten. In all cases but one the pains were good at the time of the first injection. Indications for repetition of the hyoscin injection seemed to be the patient's general condition and the frequency of the pains. In no case was a second dose of morphia given. The memory test could not be relied on; further observations on the corneal and plantar reflexes were of minor importance in drawing conclusions. Considerable experience was required by the practitioner in the treatment of cases of twilight sleep; the same remark applied to nurses who, if left in charge of such cases, should be carefully trained in the routine beforehand, as it was more than possible that dangerous results might supervene if the giving of morphia and hyoscine were left to inexperienced persons. Any case of twilight sleep demanded the constant attendance of the doctor.

General effects on the mother.—Mental confusion, thirst, and restlessness were observed in about half the cases, but no active delirium. Labour did not seem to be prolonged after giving the first injection. Any prolongation which was noted in their series occurred before the injections were given. Out of the 67 cases there were 12 forceps deliveries, but the indications were due to obstetric complications, such as occipito-posterior positions or large head, and not due to the effects of the drug on uterine contractions. The placenta was spontaneously expelled in 65 out of the 67 cases, there being evidence that uterine contraction and retraction were not interfered with. There were two cases in which there was hæmorrhage in the third stage, one due to an adherent placenta, the other to a low-lying succenturiate placenta. These cases could not be laid to the door of the narcosis alone. The puerperium in all cases was undisturbed, nor was involution retarded.

Effects on the child.—In 53 out of 68 babies (one case of twins) breathing or crying was noted as spontaneous. In 13 cases the baby was described as blue, but in one instance only was there cause for alarm. Most of the blue babies at birth were limp but soon recovered. Hot baths and artificial respiration were only required in the minority of cases. Violent resuscitative methods for such babies were to be deprecated. Three babies died; of these, two were premature and one died of broncho-pneumonia on the sixth day. There were three cases of white asphyxia with *forceps* deliveries, due to delay from obstetric complications and not to the drugs used. A definite opinion on the effects of hyoscine and morphia on lactation could not be given owing to the short stay of patients in the hospital. Of the 64 living babies who left the hospital, 49 were breast fed and 34 had regained their birth weight during the first week.

Mr. GORDON LEY read a report on 135 cases of twilight sleep at the City of London Lying-in Hospital observed by Dr. COMYNS BERKELEY and himself.

Dosage.—Of the 135 cases reported on, 128 were primiparæ and 7 multiparæ. The first injection was given with the cervix two fingers dilated and the pains strong and regular. The dosage was that agreed upon. The second dose was given three-quarters of an hour to one hour after the first and succeeding doses at hourly intervals. The number of injections varied from 1 to 53, with an average of 13·1. Morphia was repeated in 1/6 gr. dose in 7 cases when consciousness was being gradually regained, and produced a satisfactory return to the twilight state. The memory test was applied in all cases and was found generally unsatisfactory.

General effect on mother.—Catheterisation was, as a rule, necessary during labour. Complete amnesia was produced in 47·4 per cent. of the cases; partial amnesia in 45·2 per cent. Complete analgesia was produced in 8·2 per cent.; partial analgesia was present in 22·9 per cent., excluding, in each case, those patients in whom there was complete amnesia. Thirst was present in 63 per cent. of the cases, nausea and vomiting in 24 per cent. Mental confusion was marked in 24 per cent., slight in 34 per cent. Restlessness was considerable in 25 per cent., slight in 17 per cent. Excitement was present in 35 per cent., and a small proportion of these were maniacal. Pulse and respiration were never affected. In 34 per cent. the pains appeared *sub*normal, and in 1 case there was complete suppression. The interval between the pains was in all cases normal. Bearing-down efforts were, as a rule, subnormal; they were good in 44 per cent., fair in 3 per cent., slight in 40 per cent., very slight in 3 per cent., and absent in 10 per cent.

Labour.—There was prolongation of the second stage of labour. Compared with the average percentages of the hospital, the number of forceps cases was increased; perineal tears were greatly in excess (due to the difficulty of controlling the patient with the head on the perineum), and there was an increased failure of occipito-posterior positions to undergo spontaneous rotation, attributable to the lack of bearing-down efforts which, combined with strong pains, are so important in the spontaneous rotation of these positions. The third stage was unaffected.

Effect on infant.—In some cases, especially when chloroform was given, there was a disinclination to breathe, associated with cyanosis and general limpness. Three children were still-born. In one the pregnancy was only 32 weeks advanced. In the other two death was almost certainly due to intra-uterine pressure from the drainage away of the liquor amnii. Of the children born alive the subsequent condition of 129 was satisfactory. Six died within the first 20 days of life, but in none could it be said that the treatment played any part as a cause of death. From the point of view of the practitioner, it must be remembered that the number of forceps cases is considerable, and are relatively difficult owing to the fact that the diminished bearing-down efforts fail to force the head deeply into the outlet, or fail to rotate occipito posterior positions, which therefore require manual rotation before extraction. The condition of the baby may cause grave anxiety to the inexperienced, and deaths are likely to be produced by too vigorous treatment. The constant attendance of the doctor and the absolute necessity of having a nurse skilled in this line of treatment cannot be impressed too forcibly on patient and friends. The treatment requires considerable experience both of the method itself and of midwifery, and it appears probable that it should be withheld in all cases except those in which the capacity of the patient for bearing pain is greatly below normal, and is evidenced early in labour.

Discussion.

In the discussion which followed Dr. W. A. POTTS said that he never had nausea or vomiting with his cases. He thought the restlessness might be due to overdosage with hyoscine. He always gave morphia gr. 1/4 to 1/6, and hyoscine gr. 1/200, and for subsequent doses of hyoscine gr. 1/200 at 2-hourly or longer intervals. If the patient were not under at the third dose he gave a whiff of chloroform, and in this way could make a success of any case. He usually used chloroform at the end of labour, giving the last dose at some considerable interval before the child was born, so that at that time the patient was just coming from under its effects. It was essential that the patient be given water at intervals when the labour was prolonged, and it was advisable to let her come out from the influence of the drugs and have a meal and then start the administration again. This diminished the tendency to uterine inertia. He had only had one case of post-partum hæmorrhage and that was probably due to slight capillary oozing from a small laceration of the cervix. He had not found an increased use of the forceps necessary.

Dr. W. O. GREENWOOD said that out of a series of 240 cases he had only had two complete failures. He thought that his success depended upon frequent and rigid testing of the patient. The dose could be standardised, but the patients differed in their reaction to the drugs. He had used morphia gr. 1/4, and scopolamine gr. 1/100. Only highly nervous patients needed larger doses. He thought gr. 1/450 too small a dose on the whole. He thought that if amnesia was perfect it was safe to say that there was some analgesia.

Dr. J M BRYDONE thought the method could be made an absolute and complete success from the patient's point of view. A little chloroform at the start was a great help. He had never given more than three injections. He had had no trouble with the babies. He had found the memory test unsatisfactory.

Dr. ROBERTS recapitulated the points of the paper by Dr. Stevens and himself. The method had given good results. Pain was diminished in practically 90 per cent. Administration should be begun when pains were regular and strong. The size of the os was no guide. Judgment was necessary with regard to the number of injections to be given. Repetition depended upon the condition of the patient and on the pains. Further observations were necessary to determine the value of the memory test. The corneal and plantar tests were of minor use. Training of physician and nurse was very necessary. Constant attendance on the part of the physician was needed. Prolongation of labour was not marked in their series. Warmth and quiet were all that were needed for the baby.

Lady BARRETT said that in a series of 30 hospital cases she had always given morphia gr. 1/6. Patients had rarely failed to remember objects shown, but many had amnesia with regard to labour. She had had greater success by giving small amounts of chloroform at the end of labour, so that the last few pains were not remembered. There had been no case of post-partum hæmorrhage. The only still-birth was a small premature child.

Dr. COMYNS BERKELEY said that the memory test was no good. The only danger to the child was in trying to revive it. Strict supervision was necessary.

The PRESIDENT said that the method was by no means devoid of danger. Hyoscine was a dangerous drug owing to an idiosyncrasy towards it on the part of certain people, and once given hypodermically it could not be recalled. And on top of this dangerous drug chloroform was given as a general anæsthetic. The morbidity increased with the number of forceps cases. There was an increased morbidity of the mother, an increased mortality of the mother, and increased mortality of the baby.

Captain WILLIAMSON said the method was valuable in suitable and selected cases. It should be administrated after every precaution was taken, and only by those who were competent to deal with any obstetrical emergency which might arise.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A well-attended meeting was held at the West London Hospital on Dec. 7th, Dr. A J. Rice-Oxley being in the chair. —Papers were read on (1) Methods of Detecting Simulated Deafness, by Mr. Richard Lake, and (2) Methods of Detecting Simulated Blindness, by Mr. Percy Dunn.—A discussion followed, from which it emerged that these forms of malingering were very uncommon in the British Army, as far as the experience of the members present went.

HUNTERIAN SOCIETY.

The Medical Classification of Recruits.

A MEETING of this society was held on Dec. 6th at the Royal Society of Medicine, Wimpole-street, Mr. HUGH LETT, the President, being in the chair.

Captain HALDIN DAVIS, R.A.M.C. (T.F.), opened a discussion on the Medical Classification of Recruits. He showed how the problem has changed since the beginning of the war. At first the difficulty was to prevent unfit men from getting in, while now the problem is to ensure that no useful individual may be left out. He traced the steps by which the present system of grading recruits in various categories had arisen and explained the provisions of the different Army Council instructions bearing on this subject. He ascribed most of the troubles which were made by the Recruiting Medical Boards under the War Office to two causes: First, the great rush of work, which necessitated sometimes as many as 300 recruits being examined in one day; and, secondly, to the fact that they were provided with no general instructions as to the lines upon which they were to proceed and the consideration to be paid to the different conditions they might meet with. In both these matters, Captain Davis said, the boards working under the Ministry of National Service have a great advantage: Firstly, there is unfortunately no rush of recruits at the present time, and the boards are consequently not overburdened with work; and, secondly, they are provided with an excellent handbook of instructions which the Ministry of National Service, profiting by the experience of the War Office, have issued for the benefit of their commissioners and medical staff. There was no doubt that working under these conditions the Ministry of National Service would be able to obtain far more uniform standards throughout the country and give more satisfaction to the public. Captain Davis classified the defects which diminish but do not absolutely nullify a man's military value under the following heads: (1) deficiencies of the senses; (2) defects of the heart and lungs; (3) defects of other internal organs, especially of alimentary system; (4) defects of the nervous system; and (5) defects of the locomotive system—i.e., the spine and limbs. He pointed out as regards vision that, as the standard had had to be lowered considerably, it was a question whether a man with only one eye, but that eye perfect, should not be considered as eligible for category A. As regards cardiac defects, he was of opinion that the only useful criterion of fitness was reaction to work, and that the elaborate examinations of the heart made by modern methods were extremely useful. He mentioned the practical point that young recruits whose heart muscles seemed doubtful at first often improved on training, but that elderly ones—i.e., over 33 or 34—never did. Many of the latter can stand the first few weeks, but afterwards steadily degenerate. He emphasised the importance of good digestion to the soldier. While recognising the difficulty of detecting cases of gastritis by examination, he thought it was a pity that so many crept into the Army, and was of opinion that the best thing was to get rid of them at the earliest possible moment. As regards nervous diseases, the most difficult problem is the neurasthenic, who, in Captain Davis's experience, usually ended in the cookhouse. As regards the delicate question of certificates given by private medical practitioners, he was of opinion that the correct course for the practitioner to take was to refrain entirely from giving any opinion as to the fitness or otherwise of the patient, and merely to set down the physical signs found and the medical history during the time he had attended him.

Dr. RUSSELL WELLS said that if such papers had been read in the early days of the war much difficulty in connexion with the examination of recruits would have been avoided. Since February, 1916, the recruiting medical boards of London, at the desire of the War Office, had referred to the National Hospital for Diseases of the Heart doubtful cardiac cases for examination and report. Up to the present time 10,190 cases had been reported on. The name, age, and occupation of each recruit, and a statement of how he felt, in his own words as far as possible, was recorded. A careful history of his previous diseases, habits, and subjective symptoms, such as dyspnœa, pain, palpitation, vertigo, faintness, sleeplessness, &c., was taken. This part of the examination, depending, as it did, on the man's truthfulness, though important, could not be given as much weight as the rest of the report. The urine was examined. The recruit had his pulse-rate, blood pressure, and rate of respiration taken in the recumbent position and was then made to run up and down stairs, so as to raise his body 20 feet vertical in 30 seconds; immediately afterwards the pulse-rate, blood pressure, and respiration were taken again. After resting in the recumbent position for three minutes pulse, blood pressure, and respiration were again recorded. He was then weighed and his electrocardiogram taken. After this his heart was examined by the screen with X rays, with due precautions as to centering the tube, a record being made of its size, shape, position, and transverse diameter. After this he was examined by the usual clinical methods, the observations being noted under the headings of inspection, palpation, percussion, auscultation, and the state of other organs, in so far as they related to the cardiac condition. A diagnosis was stated and a recommendation as to category made, the classification, however, properly remaining entirely in the hands of the board sending the recruit for examination. In every case the full record with a print of the electrocardiogram was sent to the board and another copy filed at the hospital. The staff of the hospital were engaged on a detailed analysis of the first 10,000 cases, with a view to ultimately publishing the results, and he felt he must not allude to their conclusions, but a few of his personal observations might be mentioned. First, in the great majority of instances the cases sent to the hospital were really doubtful ones. Taking a straightforward lesion like aortic regurgitation as a test, the fact that out of the 10,000 men under 300 presented "aortic" diastolic murmurs, many of these being difficult cases, showed how carefully the boards had eliminated well-marked instances of heart disease. Drugging with a view to disturbing the heart's action, and so avoiding military service, was, he thought, not common, and was far easier to detect than was usually supposed. He gave an amusing instance of quinine being discovered in a recruit's urine, when the man confessed that he had taken two eggcupsful of ammoniated tincture of quinine "to keep himself up." He detailed the symptoms which in his experience followed the improper use of the nitrites, cordite and the like, and pointed out how they could be distinguished from genuine disease. Most of the drugs suggested as likely to be used chiefly affect the pulse-rate; and if there was one thing more than another that had been borne in upon him in the course of this work, it was the slight importance of a rapid pulse at the time of examination. Few, he thought, realised how greatly or how easily the pulse might be accelerated; nearly all normal hearts accelerated on exercise, the increase often being as much as 20 to 25 per cent. or even more, and practically always in normal people the blood pressure rose on exercise; a rise of pulse-rate with a fall of blood pressure on exertion was the bad sign. Captain Haldin Davis had said that the soft heart of the young improved with training, but that the same sort of heart in the man of 35 broke down, and he expressed his complete agreement. The slightly anæmic indoor worker who complained of shortness of breath on exertion and had a localised systolic murmur at the apex, was a very common type; he was "the atonic heart of the indoor worker." If the heart was not notably enlarged and the arteries were healthy these men greatly benefited by training, provided it was not too rapid. On the other hand, some arterial thickening was much commoner than he at any rate was formerly aware. Frequently an examination of the little bit of the radial artery accessible to the finger revealed nothing abnormal, but if the brachial artery was felt from the elbow to the axilla, marked thickening could be detected. He had seen many cases of definite arterio-sclerosis in quite young men, and when the age of 30 was passed they increased in number. He would not enter into the debatable question as to whether those localised systolic murmurs heard from the xiphoid to the apex but not conducted out, which were frequently classified as functional, originated at the mitral or tricuspid orifices, but felt convinced that in very many cases they were due to regurgitation as the result of the lax condition of the cardiac muscle. In men over 30 it was not very uncommon to find a really large heart which seemed to lie on the diaphragm; these men were frequently fat and usually dyspnœic on slight exertion. Often no murmur could be heard, sometimes a soft localised systolic murmur at the apex could be elicited by exercise; arterial

thickening was frequently absent, and they seemed to him to constitute a distinct class worthy of investigation. The present general examination of the population for military purposes afforded a unique opportunity for medical research, and he felt that if Army medical officers would examine the men under their charge from time to time and record how those with the various slighter forms of cardiac derangement stood the fatigues of training and active service cardiology would be greatly advanced.

Dr. F DE HAVILLAND HALL suggested that the formation of a probation camp to which men of doubtful physique could be sent and kept under observation would save the country expense and the individual needless inconvenience. The majority of the men would almost certainly improve under careful training, whereas the unfit could be weeded out and returned to civil life. He thought it essential that the urine of every applicant should be tested, as men with albuminuria were unsuited for exposure to wet and cold coupled with great exertion. He was opposed to passing any man for active service with the signs of quiescent pulmonary tuberculosis, and he was of opinion that at least six months should elapse in the case of a man who had had pleurisy before he was passed.

Major DUNDAS GRANT also spoke.

Reviews and Notices of Books.

Midwifery. By Ten Teachers. Under the direction of COMYNS BERKELEY, M.A., M.D., M.C. Cantab., F.R.C.P. Lond., Obstetric and Gynæcological Surgeon to the Middlesex Hospital, &c. Edited by COMYNS BERKELEY, H. RUSSELL ANDREWS, J. S. FAIRBAIRN. With 303 original illustrations and 4 coloured plates. London: Edward Arnold. 1917. Pp. x. + 735. Price 18*s.* net.

THIS book is an interesting experiment in combined authorship. It is the result of the coöperation of ten teachers in London medical schools. According to the preface, the whole corps has acted in an editorial and revisional capacity on every chapter and section of the book, both text and illustrations. As nearly all the authors are, or have been, examiners, the book will certainly be popular among students; it will be read with interest, too, by those teachers and examiners who are not among the number of the corps. The result of this method of authorship must be largely of the nature of a compromise, and the book is an eminently safe guide to the practice of midwifery. It contains nothing very startling and nothing very novel, and therefore is well adapted for the use of the student. These very qualities, however, render it less interesting than if it were the work of an individual or contained the teaching of a single school. It is divided into five sections dealing respectively with Pregnancy, Normal and Abnormal; Labour, Normal and Abnormal; the Puerperium; the Newborn Child; and a final section dealing with the various Operative Procedures.

We notice that the authors do not accept the view that the cells of the membrana granulosa are derived from the germinal epithelium, but describe them as of stromal origin. The account of the height of the fundus of the uterus during pregnancy differs very markedly from the figure given to represent these levels. In the figure the height of the fundus of the uterus at the twelfth week is shown as about 3/5th of an inch above the symphysis pubis, instead of 2 inches as it is given in the text, and at the twenty-fourth week it is shown in the figure as at the level of the umbilicus while it is described in the text as above that level.

It is always interesting in a book of this kind to read the accounts of the treatment of some of the more important accidents of childbirth. We think it a pity that the authors should figure and describe plugging the vagina in a case of placenta prævia, as the second alternative they give is much less dangerous and so much more effective—namely, dilatation of the cervix with dilators and the immediate introduction of a de Ribes bag, or the performance of version. In the chapter on accidental hæmorrhage plugging the vagina is strongly recommended for this accident; for many years the majority of London teachers were opposed to this practice, and many of them will be surprised at so complete a *volte face*. In the diagnosis of a contracted pelvis we are told in the text to introduce the right hand into the vagina, but in the figure illustrating this procedure, to which no legend is affixed, the left hand, which is much the better hand to employ with the patient on her back, is shown in the vagina. The description of internal and external cephalic and bipolar podalic version is very short and suffers as a consequence. Nothing is said of the advantage of using sometimes the left or sometimes the right hand in the vagina or of placing the patient in some cases on her back and in other cases on one or other side and employing internally whichever hand is most suitable. The description given has the merit, for the student, of being short, but he will find it of no great use to him in the performance of a difficult version. We strongly dissent from the advice to take hold of the handles of the axis-traction forceps as the head is emerging over the perineum; this is unnecessary and even bad practice.

The method advocated of rotating the head in an unreduced occipito-posterior position is not so effective as that of seizing the head between the thumb and fingers, to which there seems no valid objection, and it is certainly most efficient. The authors adopt the terms "sluggish uterus" and "exhausted uterus" for primary and secondary inertia, because they think that the use of the term secondary might lead the reader to imagine that it was so called because it follows the primary variety. It may, however, be objected that a uterus the subject of primary inertia is not always sluggish, the contractions may occur relatively often but may be quite ineffective. The two expressions "sluggish" and "exhausted" serve as very fair descriptions of the two conditions, but we think it would be a pity if such well-known and classical terms as primary and secondary inertia were abandoned.

We have been deliberately critical, so that the authors may, if they think well, introduce modifications in the future editions which they will certainly be asked to supply. There is no intention of bringing together all the fault finding in order to depreciate a book, which is a very creditable production likely to be of great practical value. The illustrations are good and well drawn, and there is a full index.

JOURNALS.

Psychobiology. Vol. I., No. 1, July, 1917. London: Cambridge University Press; Baltimore: Williams and Wilkins Co. Bimonthly, $5 50 per year.—This is a new journal devoted to the field common to psychology and the biological sciences. The editorial staff is representative of some of the leading investigators among the university staffs of the United States, and in their opening announcement they declare their aim as the furtherance of research bearing on the interconnexion of mental and physiological functions; they welcome investigation in pharmacology, physiology, anatomy, neurology, and psychiatry in so far as it has explicit specific relation to problems of mental life. The number with which the venture opens contains several papers, reference to the titles of which will give the reader sufficient indication of the scope of the journal. Dr. S. I. Franz and Dr. K. S. Lashley, of the psychological laboratory of Johns Hopkins Hospital, record experiments on the retention of habits by the rat after destruction of the frontal portion of the cerebrum; Dr. D. I. Macht and Dr. S. Isaacs have a paper on the action of some opium alkaloids on the psychological reaction-time; Dr. R. Ogden and Dr. S. I. Franz describe a series of investigations on the recovery from experimentally produced hemiplegia in apes. We congratulate the editors on this inauguration of an attempt to bring physiology and psychology closer; it is in a way, a protest and a reaction from the teaching of a school of psychology which lives in a world of concepts, ignoring the fundamental basis of its own science.

Veterinary Review. Edited by O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S. Vol. I., No. 4. November, 1917. Price 3*s.* 6*d.*—Professor Bradley, the principal of the Royal (Dick) Veterinary College, Edinburgh, in the *Veterinary Review*, gives to the professions of human and veterinary medicine a résumé of all the latest work done in comparative science at home and abroad. Abstracts have been made from every branch, including anatomy, hygiene and preventive medicine, parasitology, surgery, serology and immunology, infectious diseases, toxicology, and teratology. The worker who wishes at a glance to know the latest which has been done, after consulting this Review may be able to put his finger on the full details which he desires without searching through a lot of tedious literature. The November number is well up to the high standard of its predecessors.

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THE LANCET.

LONDON: SATURDAY, DECEMBER 15, 1917.

The Repair of the Nose and Jaws.

THE problems presented to surgery in the present war, though mostly having a counterpart in lesions met with, more or less frequently, in civil practice, differ from them generally in the extent of the lesions which have to be treated, and also in the very large number of analogous cases of different groups with which the surgeon has to deal. It is therefore not surprising that expedients have been devised and methods have been invented to which the experience of previous civil practice and earlier wars had not given rise. That is only to say that intensive study has evolved pertinent remedy. In THE LANCET of last week papers by Major H. D. GILLIES and Captain KELSEY FRY appeared which described the new departures in surgery resulting from the special care of cases of severe facial injury at the Queen's Hospital, Sidcup, and this week two more papers belonging to the same category are published, one by Captain J. L. AYMARD and one by Lieutenant G. SECCOMBE HETT. Every reader will agree that the ingenuity and the skill of the operators are worthy of the highest praise. The results are both wonderful and suggestive, and it is difficult to say which is the more remarkable—the improvement in the cosmetic appearance or the benefit in many cases to the functional utility.

The papers all deal with the repair of the injuries of the jaws and of the nose, and are so clear in their message that nothing but the importance of that message justifies our emphasising it. In the carrying out of the procedures for the repair of the jaws and of the overlying soft parts the fundamental principle must be grasped that the surgeon and the dental surgeon should participate in the work, if the best results are to be obtained. The surgeon will make the flaps, he will implant pieces of bone and cartilage, but unless he has the skilled assistance of the dental surgeon he cannot obtain perfect replacement of the fragments which only the work of the dental surgeon can give; the coöperation of the two is essential, while at any stage the help of the artist is of enormous value both for the devising of procedure and for the visualising of an ideal. In each direction Professor TONKS'S aid to the surgeons has been striking. When the injury to the lower jaw has been great, it is necessary that some rigid support shall be added to replace the lost bone When the loss is less it may be possible, by careful attention to the position of the fragments, to obtain bony union, but natural consolidation may be the work of months, and the expectant treatment thus become worse than more thorough dealing with the condition. But fragments of bone almost separated from the soft tissues may survive and assist in the union of the bone, and it is therefore of great importance not to remove unnecessarily any pieces which give the least hope of survival. Yet to obtain a useful jaw the fragments must be placed and held in a position suitable for their consolidation. Good results can here be got by the employment of dentures and other forms of splints so designed as to keep the fragments in position. When, however, it is clearly hopeless to expect bony union of the fragments, on account of the large loss of bone, other methods have to be employed. A rib offers great advantages for replacing a portion of the mandible. An osteo-cartilaginous graft can be used and can be so placed that the point of its greatest convexity is in the site of the chin, but in all these elaborate cases it is essential that the soft parts shall be fully formed before the bone or cartilaginous transplant is placed in position. To provide the new soft tissues is not always easy. The cheek can supply only a limited amount of new tissue; if more is taken the resulting deformity will be as conspicuous, nearly, as that which it was proposed to set right. Flaps have to be taken from other parts, and here the ingenuity of the surgeon is greatly called upon. Major H. D. GILLIES has employed single- and double-pedicled bridge flaps cut in many new methods. A single-pedicled bridge flap is, of course, made by the transference of a broad flap of skin from a neighbouring part over untouched skin, and after ten days or a fortnight, when the flap has taken a firm hold in its new position, the pedicle is divided from the transplant and then replaced in its former position. Major GILLIES has improved on this idea; he has employed double-pedicled bridge flaps. A broad band is taken, for instance, from the scalp; it remains attached at the two ends, it is then turned down into the new position, and there it is fixed by sutures. The flap benefits by the double blood-supply, so that the risk of sloughing is markedly reduced. When the flap has taken firm hold the pedicles are divided and replaced in their former position. In this way Major GILLIES provided one of his cases with a new lower lip and chin, and as the flap was taken from the scalp the patient had a beard also, while a bald head is left for future treatment. Captain FRY'S paper dealing especially with fractures of the upper jaw shows how it is necessary in such cases to support the skin of the face so as to hold it out in the right position. Here the art of the dental surgeon comes into play, for only by means of a prosthetic appliance can the appearance of the face be regained. By steady expansion of the splint the soft parts are moulded, with the happy results displayed last week by Captain FRY'S pictures.

The papers published this week deal especially with the repair of the nose. Lieutenant SECCOMBE HETT has contributed a valuable note on the utilisation of portions of the walls of the nose to repair nasal deficiencies. For instance, he takes a portion of an inferior turbinal bone to fill a gunshot perforation of the hard palate. In cases of the loss of the upper part of the bridge of the nose the middle turbinals

have proved useful for filling the hole and also for supporting a skin flap. The inferior turbinal has formed the base of a new ala, even when it has had to be put on the other side of the nose, a left turbinal being transferred to the right ala. In one case, where the bridge was greatly depressed with undue prominence of the tip, the tip was lowered by removal, a submucous resection was made of the septum, and the removed cartilage was utilised to obliterate the depression. Sometimes the sunken nose can be raised by a piece of septal cartilage removed from another case, and a piece of costal cartilage may be employed in the same manner. Captain AYMARD'S article deals with the same subject. He shows what conditions are necessary to produce good results, and he describes how to form the framework and how to provide the soft structures. Sometimes he forms the new nose on the patient's shoulder, and then transfers it by means of a long pedicle to the face. A paper read by Mr. PERCIVAL COLE before the Medical Society of London last week, which we shall publish shortly, gave many striking examples of the manner in which skin can be employed to replace mucous surfaces, and in this way most valuable developments in use and appearance are obtained. Only those who have seen these cases before and after the operations can appreciate fully the good that can be done. Infinite patience on the part of the surgeon and the patient is needed to obtain the desired results, but these may be very good, and we all must rejoice that so much can be done for our men mutilated in the war.

The Nursing Profession and Voluntary Registration.

JUST as sick-nursing, as we now understand it, took its origin in one of the most disastrous war campaigns of the nineteenth century, so the martial conditions of the last three years are likely to bring about a change of a permanent nature in the profession of nursing. It is true that there has been continuous effort on the part of public-spirited people for nearly 50 years to fix a recognised standard on sick-nursing by Act of Parliament, and in so doing to protect the public against inefficient and fraudulent service, whilst assuring a definite status to the nurses themselves; but the movement failed by reason of the lack of unanimity among nurses and others interested in nursing as to the need for State registration and the advantages to be derived from it. Nor was this to be wondered at since the work of a nurse is of so varied a character that opinion is sure to be divided as to the nature and details of the training to be provided. Obviously the qualification required by a hospital sister is widely different from that desirable for a district nurse or one attached to a tuberculosis dispensary. For the moment at least any standard imposed upon nurses from without by an Act of Parliament appears unattainable in view of the fact that no measure except an agreed one can hope to get through; but the support which is being given by nurses of all shades of thought and kinds of practice to the College of Nursing, which owes its origin to the indefatigable energy of Sir ARTHUR STANLEY, shows the need which is keenly felt by the nursing profession for some central unifying association.

Since the objects of the College have recently been the matter of some controversy it may be well to recapitulate them here. On the printed application for registration they are stated to be:—

1. To organise the nursing profession.
2. To secure State registration for the trained nurse.
3. To make and maintain a register of trained nurses, and by this means to protect the public.
4. To protect the interests of trained nurses.
5. To raise and maintain the standard of training.
6. To establish a uniform curriculum of training and one portal examination.
7. To establish lectureships, scholarships, and in every way to promote the advancement of the nursing profession.

The concrete advantages of this programme have nowhere been more persuasively stated than by Miss V. MATHESON, secretary of the Irish Board, at a meeting held in Belfast on July 26th, and now republished as a pamphlet.[1] Miss MATHESON describes her article as a nurse's talk to nurses, and we are content to leave her to address her own proper audience; but we cordially endorse her view that it is essential for the body of nurses as a whole to have some outward expression of their ideals, and apart from the work of each as an individual. Some nurses, she rightly observes, find this expression in their hospital training school; but hospitals bound by their constitutions are obliged to devote their funds primarily to their patients; and there is seldom any surplus available for the interests of their nursing staffs, although undoubtedly the services rendered by probationer nurses as wardmaids and scrubbers save the hospital management many thousands of pounds a year. Miss MATHESON asks for a centre of nursing education at which examinations shall be held, scholarships offered, and where interchange of information and advice is always available. Those who have worked unavailingly for a one-portal entry to the medical profession will be the first to see the advantages of this desirable unification for nurses. These things are included in the programme of the College of Nursing, which has already obtained a voluntary register of over 7000 nurses, all of whom have produced evidence of efficient training in general civil hospitals.

We believe that the time has come when all those who have the real interest of nursing at heart, as well as the imagination to see how these interests can best be furthered, may well unite in assisting such a scheme of voluntary registration as a first step towards the raising of the status of the nurse and of giving her the standing which is her due. In saying this we are in full unity with the contention that any body which claims to control the training and registration of the nursing profession should be elected by nurses themselves on a wide basis representing all kinds of nursing activities. The permanent Council of the College of Nursing is to be elected on this basis, and we see no reason to doubt that the nurses who are now

[1] The College of Nursing: A Nurse's Talk to Nurses. To be obtained from the Secretary, 6, Vere-street, London, W. 1.

registering will be able to impress their wishes upon any temporary nominated Council. In fact, if voluntary registration becomes general, the position will be unassailable. This implies the laying aside of any personal feeling which may have been present on either side. Change of feeling, brought about by the introduction of new factors into the question, will be regarded as a token of public spirit and not as a sign of weakness or illogicality.

Annotations.

"Ne quid nimis."

THE WEEKLY HOURS OF EMPLOYMENT OF MUNITION WORKERS.

THE investigations of the Health of Munitions Workers Committee, presided over by Sir George Newman, have produced already, and will continue, no doubt, to produce, results of not merely transient and immediate interest or importance. It was appointed to consider and advise on questions of "industrial fatigue, hours of labour, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops." The conclusions arrived at by it will serve as a guide to those who regulate the hours of industrial work long after the immediate urgency of bringing the output of war material to the highest point attainable has ceased to confuse the issues involved and to prejudice the opinions of those anxious for the country's safety. In its Twentieth Memorandum (Cd 8801) the committee deals with "weekly hours of employment," its observations being thus supplementary to those recorded in Memorandum 5, in which "hours of work" were considered, as well as to those in its First Memorandum, issued when the urgent demands of the Army had led to ceaseless toil throughout the week and made the expediency of Sunday labour a pressing question for employers and employed. The committee now can review its past conclusions in the light of experience collected during two long years; it is able to take into consideration with the actual facts before it the effect of labour prolonged not through months but through years, and to judge with regard to women's work from its effect upon a hugely increased number of subjects engaged upon a greater variety of processes than formerly. The general tendency of previous memoranda has been to show that a point will always be reached in the work of men, women, and the young alike, at which longer hours spent in the factory fail to increase output, and at which, if the hours of labour are made longer still, the productiveness of the worker will actually be diminished. Fuller, more complete, and more accurate data gathered from the actual experience of those most interested in watching the productiveness of individual factories have confirmed this opinion. The committee is now able to report, with particular reference to the week as distinguished from the day, that a reduction varying from seven hours to 20, where it has been tried, has in no case had for its result more than an insignificant diminution of total output, while on the average it has produced a substantial increase. Alterations of hours may have different effects in different operations, and experience must decide in each case the exact limit which cannot safely be exceeded, but that the hours worked weekly can, as a rule, be reduced with advantage to a total of from 50 to 55 hours is a general conclusion summarised in paragraph 6 of the Memorandum now before us. In connexion with the question of production account has to be taken not merely of the slackness of work, voluntary or involuntary, which is the natural result of long and continuous toil, but of the loss of time caused by absence through sickness, and by bad time-keeping. Nor should it be forgotten that the sickness of the worker not only affects his or her immediate personal comfort, but may diminish earning capacity during future years. Long hours, moreover, are responsible not only for actual physical breakdown, but for nervous irritability tending to increase industrial unrest, as well as for such undesirable social conditions as are likely to affect those whose homes become merely sleeping-places for overweary persons. The committee therefore reviews its opinions formerly expressed, having convinced itself that the maximum limits of weekly employment already suggested by it are too high except for quite short periods, and advises that, regard being had to all the circumstances of particular cases, more reduction may safely be made. It is further of opinion that the time is favourable for such reduction to be brought into effect, with benefit to the workers' health and without injury to that sustained output upon which our existence as a nation may be said to depend.

SERUM DISEASE IN CEREBRO-SPINAL MENINGITIS AND DIPHTHERIA.

WE published in a recent issue of THE LANCET (Dec. 1st) three interesting communications on the subject of serum disease and the rashes associated with it. Two of the papers, those by Surgeon-General H. D. Rolleston, R.N., and Dr. Claude Ker, were contributions to the discussion before the Royal Society of Medicine on the Manifestations of Serum Disease which may Follow Intrathecal Injections. There is a striking concord between the results arrived at by these two observers, and as their papers contain some valuable practical suggestions they deserve to be widely read. Surgeon-General Rolleston records that in 96 bacteriologically proved cases of cerebro-spinal fever occurring during the third year of the war and treated by serums a serum reaction occurred in 58, or 60 per cent., of those who survived for ten days or more. In nine of these cases, or 15·5 per cent., the serum rash was preceded or accompanied by a definite recrudescence of meningitic symptoms. It is now well recognised that injection of serum into a healthy intrathecal space produces an aseptic meningitis, and it is established that such a serotoxic meningeal reaction after intrathecal injections in cases of cerebro-spinal fever, as in the 9 cases here mentioned, may give the symptoms of a recrudescence of the disease, and that under these circumstances a fresh injection of serum may aggravate these manifestations and do harm rather than good. Surgeon-General Rolleston suggests that a decision as to whether more serum should be given or not can be made by examining the cerebro-spinal fluid for meningococci, which would indicate the existence of an actual exacerbation, or by examining for glucose, which would be present in the serotoxic reaction, absent in a relapse of the meningitis. He further points out that this meningeal manifestation of serum disease only

develops after intrathecal injection, and he emphasises the importance of a general recognition of its occurrence. Dr. Ker arrives at almost identical conclusions. He observed serum sickness in 36 out of 48 cases of cerebro-spinal fever who lived 9 days or more—i.e., in 76 per cent. He only observed an aggravation of the meningeal symptoms during the serum sickness in two cases, though he found increased turbidity of the cerebro-spinal fluid and other indications of meningeal reaction in several others. In all of these cases the fluids withdrawn reduced Fehling's solution, and he emphasises the convenience of this test. Both Surgeon-General Rolleston and Dr. Ker point out that in spite of the frequency of rashes after intrathecal injection of serum, it is not established that they are more frequent than after subcutaneous injection. Dr. Ker discusses the effect of sharp attacks of serum sickness upon the course of the disease, and states that he regards them as advantageous rather than otherwise. He is convinced that in diphtheria a smart serum reaction, especially when accompanied by pyrexia, is often of great benefit to a patient with feeble pulse and subnormal temperature, and he thinks that many patients with cerebro-spinal fever are improved by these reactions. The third communication is a letter from Dr. Frederic Thomson giving some interesting details of the rashes occurring after the administration of anti-diphtheritic serum, showing that they are still very frequently observed and that a circinate erythema is not uncommon, being next in frequency to the urticarial type of rash. These interesting observations on serum disease and its significance should stimulate further investigation.

THE INTRAMUSCULAR INJECTION OF CALOMEL IN THE ENTERIC FEVERS.

IN the *Annali de Medicina Navale* for July Captain Galatà, of the Medical Department, Italian Navy, recommended the treatment of enteric fevers by intramuscular injection of calomel. The treatment which he laid down is commenced in the first week of the disease, and 1·5 gr. of calomel is injected into the muscles of the buttock on the first and seventh day, 0·75 gr. on the fourth and tenth; the calomel is slowly absorbed at first but later more markedly; after the third injection temperature falls, the nervous symptoms decrease, and by the fourth injection the patient is almost well. He used this treatment with great advantage in seven out of nine cases of different infections which recently came under his notice.

EYE-STRAIN AND THE CINEMA.

OF recent years the cinematograph has come to play a very important part in the entertainment of the British public, and the report of the Cinema Commission recognises it as a valuable means of education, but with certain drawbacks. The question of eye-strain has claimed a good deal of attention, and the Commission, besides recommending the continuous illumination of the hall by means of screened lights and short intervals of bright lighting between successive films, advises the formation of a special committee with representatives of the Illuminating Engineering Society to go carefully into the whole question. The luminous mist produced by tobacco smoking is a factor which greatly complicates the solution of the problem. Turning from the projecting beam to the films themselves, two defects especially have marred the comfort of the observer. There is and probably always must be, the ordinary flicker due to the mechanical impossibility of avoiding flaws in the films, and in addition there has been until now what may be called a wobbling movement of the picture as a whole. The latter takes place either in the horizontal or vertical plane and is a source of great annoyance to the observer and probably more detrimental to the eyesight than the flicker. Rapid movement of the eyes in following the image as it shifts across the screen soon becomes painful, and the quicker the movement the greater the discomfort. When the wobble is rapid the picture becomes very like what surrounding objects must appear to a person with nystagmus. Fortunately, a method has been discovered of annulling these oscillatory movements. We have had an opportunity of seeing the "cinematograph projection steadier," invented by Mr. John Dunlop, of Glasgow, by which remarkably steady pictures are produced. The invention is very simple, the film passing between rollers before it meets the projecting beam of light. Mr. Dunlop has certainly succeeded in overcoming in large degree the second of the defects we have alluded to and in relieving cinema eye-strain. Other reforms we hope will follow.

NEPHRITIS IN THE BELGIAN ARMY.

HITHERTO there has been a lack of information as to the occurrence of acute nephritis among the Belgian troops. This has now been given by Dr. Moret,[1] who has found it in about 1 per cent. of the army in the field. He states that this is not such a high proportion as that existing in the French and British troops, and that the latter have suffered most severely of all. He mentions the interesting point that latent albuminuria has been found in apparently healthy soldiers more frequently in the Belgian Army than in other armies. In the French Army Ameuille found latent albuminuria in 1·87 per cent. of the combatants and in 1 per cent. of the non-combatants. Macleod found it in 4·73 per cent. of combatants in the British Army and in 2·95 per cent. of non-combatants.[2] The Belgian Army shows 5·77 per cent. of latent albuminuria. He therefore expected that the incidence of acute nephritis in the Belgian Army would be higher than that of her Allies, and was relieved to find this was not the case. We should have supposed from this that he would have come to the conclusion that latent albuminuria had no real connexion with acute nephritis but was of the same order as the orthostatic or "functional" albuminuria often found in young adolescents. Curiously enough, his argument is in the opposite direction. He concludes that the conditions of life at the front, especially of life in the trenches, produce a hypersensitiveness of the kidney predisposing to nephritis. He regards fatigue as the principal factor which produces toxins that injure the renal filter and excite the latent albuminuria. Various infections, often of quite a mild character, aided by cold, act on the kidney as the point of least resistance and produce an explosion of acute nephritis, to which the name of war or trench nephritis may be given. He maintains that it is not a new entity, but the classical acute nephritis, which has become m...

[1] Arch. Médicales Belges, November, 1917.
[2] THE LANCET, 1916, ii., 463.

frequent among soldiers, and that trench life predisposes to other forms of nephritis besides the acute type. He urges the importance of examining the urine of all soldiers who complain of fatigue, difficulty in walking, and of lumbar pain after marching, and of giving all troops proper periods of real rest. Dr. Moret makes a point against the theory of a specific infection when he shows that a number of infective organisms, often of low virulence, have been held responsible by various observers. He regards these as merely producing their effect on a kidney with its resistance already lowered and the subject of latent albuminuria. But in that case not only should we expect more correspondence between the incidence of latent albuminuria and of acute nephritis in the different armies, but we should anticipate that as the strain of war continued nephritis would become more frequent. Fortunately this does not appear to be the case. It must be admitted that so far no satisfactory explanation has been given of the frequency of acute nephritis in this war as compared with all others except the American Civil War. The third annual report of the Medical Research Committee, which has just been issued, is not able to carry our knowledge of the etiology of war nephritis any further yet, although it is gratifying to know that researches are still actively in progress.

INFANT MORTALITY IN INDIA.

THE question of infant mortality occupies a prominent place in the annual report of the Sanitary Commissioner of the United Provinces recently published. The actual number of infant deaths during the year was 423.130, which is equivalent to 209 per mille of the births. The greatest mortality in the United Provinces was attributed to tetanus, occurring as the result of uncleanly midwifery. In most of the districts over 50 per cent. of the infantile mortality was set down to this cause. It is evident, however, that the figures cannot be relied on, and the health officers of the leading municipalities have been instructed to inquire into the age of each child reported to have died of tetanus, and also to make a personal diagnosis. By this means it is expected that the real significance of tetanus as a cause of infant mortality will have been ascertained by the close of the current year. It is impossible to contemplate the great problem of infant mortality in India in its widest aspects without appreciating the tragedy which it presents, or realising how much educated Indians might do to reduce the evil by pointing out to their less-favoured fellow countrymen the results that must inevitably follow violation of the laws of health.

MALARIA PROBLEMS.

A QUESTION which has lately caused some anxiety is whether malaria will again become endemic. If we really understood why it had disappeared from this country we might be in a position to answer the question, but the explanations so far given of the disappearance of malaria are partial and therefore unsatisfactory. A recent number of the *Paris Médical* (No. 44, Nov. 3rd, 1917) deals with this and other aspects of malaria. It is hopeful to be informed that in three years only 100 autochthonous cases have been noted in France and none in the Marseilles district, where there is much imported malaria, and, of course, anophelines. It seems as if there were still some influence unknown, the "regional factor" of Stephens and Christophers. Much has been written by our French colleagues as to the differential symptoms of primary and secondary malaria, but we do not believe it possible to tell whether a patient's attack is the first or the fiftieth. These terms have often been employed loosely, the definition here given being: primary malaria is infection with malignant tertian parasites, secondary malaria with simple tertian. But does malignant tertian change to simple tertian? There are no facts that we know of which show that a malignant tertian infection of West Africa becomes a simple tertian later. It certainly does not in West Africa itself, because there simple tertian is rare, malignant tertian universal, nor have we seen a malignant tertian from West Africa change to a simple tertian in this country. That the Macedonian cases did so change in November, 1916, is well known to microscopists, but the explanation may be that the patients were doubly infected at the start. This question of the unity of the species of malaria parasites could probably be settled by the observations of West African cases in this country. Will the war statistics on malaria give the *coup de grâce* to the special parasite theory of blackwater fever? We should have expected, with a writer in the *Paris Médical*, this hypothetical parasite to have become epidemic in its manifestations in Macedonia, but we believe it has not done so. Cases of blackwater fever have been observed so far only among malarias, not in dysenteries, paratyphoids, cholera, or any other condition. Concerning the mode of administration of quinine much has been learned during the last few years, but Mr. Stephen Fox's letter in our correspondence columns shows that finality has not yet been reached. Prophylactic treatment is not discussed in the French journal. So far as we know there is no experience in this war to draw upon. What an opportunity for a great experiment, and one if it had been successful that would have resulted in the saving of life, money, and time, and, if unsuccessful, at least of quinine! It is only by the method of controls not taking quinine that the value or want of value of any prophylactic dose can be determined. We believe the evidence points to the conclusion that the 5-grain or even 10-grain dose daily is useless as a prophylactic. Paroxysmal treatment, under normal conditions, presents no great difficulties and is usually successful, but we learn that in Macedonia failure has not been uncommon. We would note in passing that the dilution of the dose used for subcutaneous injection—viz., 2·8 grammes of quinine-urethane in 30 c.c. of saline—is unnecessarily bulky, and so for the intravenous injection 2·8 grammes in 500 c.c. Experience has shown that simple tertian parasites are difficult to eradicate from the body. The ordinary paroxysmal treatment—oral, intramuscular, or intravenous—which as such is usually so successful, does not in the doses ordinarily used effect a real cure—i.e., an eradication of parasites from the body. Hence the necessity for post-paroxysmal treatment with that object in view. What is the best method of obtaining this end? This, as recognised in these papers, can only be ascertained by observations on a considerable number of cases. The following methods are discussed:—1. A common procedure, viz., grains 10 to grains 20 daily, for considerable periods, is not a good method, for as many as 30 per cent. may relapse at any particular time while following this mode of treatment.

2. Grains 30 on three consecutive days each week is much better, for it keeps the relapses down to 5 per cent. 3. Treatment of relapses only—grains 30 during the attack and for two days more if necessary until the temperature falls—is a method which also keeps the relapses down to about 5 per cent. It has the merit, like the second mode of treatment, that it is an interrupted one, and the additional merit that quinine is not given unless it is actually necessary. The drawback to all these methods is that they probably are no more curative (in a month) than the original paroxysmal treatment. With the lapse of time, no doubt many of them will be curative, but a post-paroxysmal treatment is required which, while it is as such efficacious, will at the same time give a good chance of cure within a month or less. From this point of view we believe that these treatments will be found unsatisfactory. Neo-salvarsan treatment is recorded, but the cases are too few to enable us to estimate its value as a curative drug. Finality has not yet been reached in our knowledge of how to administer quinine in order to obtain a permanent cure, if such can be obtained by its use, and if it is not Nature that effects it.

THE CARE OF THE BLIND.

THE Departmental Committee of the Local Government Board on the Welfare of the Blind has recently issued its report (Cd. 8655). Mr. W. Hayes Fisher, President of the Board, has now appointed a committee of ladies and gentlemen to advise the Department on matters relating to the care and supervision of the blind. Most of the members have had great experience in dealing with the education and after-care of blind people, and the selection appears to have been made with discretion. There is, however, one serious omission: there is no medical man or ophthalmic surgeon upon the committee. The Departmental Committee had an ophthalmic surgeon among its number, as well as two other medical men. They invited the Royal Society of Medicine to give them help in their deliberations, and a subcommittee of the Ophthalmological Section devoted much time and trouble to the subject. Mr. Hayes Fisher, writing to the *Times* of Dec. 11th, excuses himself for the absence of any medical representative on the Advisory Committee by saying that "nine-tenths of the committee's time will be taken up with the consideration of administrative problems," and that "under existing circumstances it would not be right to make a further demand upon the time of any of our eminent ophthalmic specialists, who are already so fully occupied." In the ordinary affairs of civil life it would not be thought courteous to obtain the gratuitous advice of experts and then proceed to put their recommendations into action without inviting their coöperation. "Under existing circumstances" there may still be some of the older ophthalmic surgeons whose offers to the War Office have not been accepted and who are sufficiently free to undertake other duties. At any rate, they are themselves the best judges of the time which they have at their disposal, and it is regrettable that the Advisory Committee will be deprived of their assistance.

MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of the Medical Insurance Agency was held at 429, Strand, W.C., on Nov. 22nd, when the chairman, Dr. G. E. Haslip, made a statement with reference to the work of the agency from May to November, which showed that the amount of business transacted continued satisfactory, in spite of difficulties owing to unsettled conditions as a result of the war. On the whole, it appeared from his statement, the bulk of business has been maintained in every section. Motor business continues to grow, in spite of the shortage of petrol and the number of men away on military service. The agency also hold many cars covered against the fire risk only during the absence of the owners, and on their return it is not unreasonable to anticipate considerable extension of business. In the meantime the amount of premium received for the fire risk is less than for full risks, which naturally influences the amount received for commission. A satisfactory feature continues to be the amount of life business placed, without restriction to any particular office, but in accordance with the special circumstances of each case. A distribution of surplus profits being again possible this year, the Committee resolved that a further sum of £500 should be voted for medical benevolent purposes, making a total distribution of £1,000 during 1917, as compared with £705 in the previous year. The £500 were allocated as follows: Royal Medical Benevolent Fund, £100; Royal Medical Benevolent Fund Guild, £100; Epsom College Benevolent Fund, £50; Royal Medical Benevolent Fund Society of Ireland, £40; War Emergency Fund (Royal Medical Benevolent Fund), £210. As a result of this distribution the total sums allocated to medical charities have reached £3405. The votes at the disposal of the Committee for St. Anne's School, in return for grants made, have been given to the daughter of a medical practitioner.

THE library and offices of the Royal Society of Medicine will be closed on Christmas Eve, Christmas Day, and Boxing Day—i.e., Dec. 24th, 25th, and 26th.

Major Sir Filippo de Filippi, K.C.I.E., will deliver a lecture, illustrated by lantern slides, on "The Sanitary Services of the Italian Army," at University College, London (Gower-street, W.C.), on Tuesday next, Dec. 18th, at 5.15 P.M. The chair will be taken by the Vice-Chancellor of the University. The lecture is open to all without fee or ticket.

THE LANCET, VOL. II., 1917: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 29th will be ready early in the New Year. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

SANITARY CONFERENCE AT KARACHI.—A sanitary conference was held in Karachi recently. The conference took the form of a series of popular demonstrations on sanitary matters by means of lectures, illustrated by many lantern slides and cinematograph films. The lecturers were recognised authorities on the subjects with which they dealt, which included malaria, tuberculosis, cholera, rats and fleas in relation to plague, and methods of rat destruction, yellow fever, public health, functions of a municipality, &c. The conference was held under the auspices of the municipality of Karachi.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Committee was held at the offices of HE LANCET on Monday, Dec. 10th, Sir RICKMAN GODLEE the chair.

A letter was read from the medical officer of health of ilford Haven, referring to the need or otherwise of the elgian workers at that port being attended by a medical an of their own nationality. The medical officer explained at the Belgian community was smaller than it had been. id was being attended by the local medical practitioners that the help of a Belgian practitioner was no longer quired.

Dr. DES VŒUX submitted a financial statement which owed the present position of the Fund to be as follows:—

Belgian Doctors' and Pharmacists' Relief Fund.

TREASURER'S CASH ACCOUNT. 1ST JULY TO 30TH NOV., 1917.

17.								
July.	To Balance...	£5477	13	4	By Relief	£4012	0	0
	,, Interest...	34	0	7	,, Clothes	10	10	0
					,, Administration expenses		2	6
					,, Balance Cash at Bank...	1489	1	5
		£5511	13	11		£5511	13	11

We have examined the above account with the books and vouchers the Fund, and certify it to be correct according to the books. In our nion the receipts and payments have been fully recorded, and we re compared the receipts with the published acknowledgments and re had produced to us certificates as to the correctness of the balance shown. CREWDSON, YOUATT, AND HOWARD, Chartered Accountants, Auditors.

0a, Basinghall-street, London, E.C. 2, 5th Dec., 1917.

This pecuniary position corresponded with the estimate of Committee, earlier in the year, that the funds in hand uld enable a mensuality of £800 to be sent during 1917 to lgium, but that the end of the year would see the practical haustion of the Fund. It was decided that £700 should sent for the month of December, and that the amount ilable for January should later be fixed. Dr. Des Vœux announced that temporarily the clothes department had en shut up, the premises having been taken over by vernment, but that he had found a lady willing to ervise its continuance when the necessary accommodation was available. For the moment the clothes have en stored.

The Committee debated the future prospects of the Fund, ring regard to the fact that the sum remaining at their posal would be exhausted by the mensualities of December l January, and came to the unanimous conclusion t an attempt should be made, despite all the attend- difficulties, to raise more money. A letter from Mr. B. Poland, Director for Europe of the Commission Relief in Belgium, who until the outbreak of hostilities ween Germany and America had been resident in gium, was read, which described in moving terms e the terrible plight of the Belgian middle-class ulation and the unbounded gratitude of the medical pharmaceutical professions for the assistance which been afforded them by their British colleagues. the face of such a letter the Committee found it a amount duty upon them to proceed with the difficult of raising further money, and it was decided that steps uld be immediately taken to this end. It was arranged a letter signed by the Committee and placing the ation before the medical and pharmaceutical professions uld be published in early issues of the medical and rmaceutical press, and that Mr. Poland's communication, ded to above, should also be published in the same nals and circulated widely in other quarters.

ELFAST MEDICAL STUDENTS' ASSOCIATION.—On ay, Dec. 7th, at Queen's University, Belfast, Dr. S. kington, President of the Medical Students' Asso- ion, having delivered his opening address dealing with progress of medicine, Professor J. Lindsay gave a ire on the prospects before the medical student, which lescribed as bright for all. In replying to a vote of ks, Dr. Lindsay said the scheme recently adumbrated ee medical treatment for everyone would be a difficult It would come up against specialism and medical arch, and would tend to a dead level of mediocrity.

MEDICAL RESEARCH COMMITTEE.

THE THIRD ANNUAL REPORT.[1]

WE dealt last week with some of the more general aspects of the work of the Medical Research Committee, and now pass on to consider in detail certain departments of it.

The Central Institute and its Departments.

The Mount Vernon building used until August last for the study and treatment of military cases of heart disorder is now to be employed for the care of the special disabilities incident on flying, the heart cases having been transferred to larger accommodation at Colchester.

Department of Bacteriology.—The department has continued to turn out work of the first interest. The diminished alkalinity of the blood shown to be present in cases of gas gangrene has led to successful treatment of these cases by the infusion of alkaline solutions. Further work on the emigration of white blood cells and their place in the general physiology of wound healing has been done. The classification of cases of war nephritis has been advanced a stage, and investigations made into the best methods of skin-grafting, into the various types of *B. dysenteriæ* Flexner, and into the bactericidal and tissue-destroying effects of certain groups of antiseptic substances. The special beds at St. Mary's Hospital set apart for research in connexion with the Department have had to be abandoned owing to shortness of staff.

Department of Biochemistry and Pharmacology.—An investigation into the action in experimental dysentery of the alkaloids of ipecacuanha has had practical results, as well as another into the effect on amœbic infection of the Mexican bitter-bush, *Castela nicholsoni*. Work on the nature of shock-like conditions and on the properties and commercial preparation of the flavine antiseptics has occupied much attention. In addition, confidential inquiries of various kinds have been carried out for Government departments. One member of the staff has inquired experimentally into the physiological actions of alcohol for the Central Control Board, and the department has benefited by the help of Dr. A. N. Richards, professor of pharmacology at Philadelphia University.

Department of Applied Physiology.—This department has been decentralised and made partly perambulatory to meet special needs, relinquishing its rooms at the London Hospital Medical College. Pressing work has been done on the composition of workers' dietaries and on economical methods of cooking foodstuffs. The principles of ventilation have been further investigated by the cata-thermometer and the emission of radiant heat from the human skin accurately measured. Synthetic biochemical processes, especially in relation to the conversion of the energy of light into chemical energy, have been further studied, as well as the physiological problems of flying at high altitudes.

Statistical Department.—In addition to the great task of preparing medical statistics of the war, the epidemiology of phthisis has been studied with the provisional conclusion that two allied organisms are concerned, one affecting early adult and the other middle life, each with a distinct geographical distribution. Infant mortality, the periodicity of measles epidemics, and the span of human life, as illustrated in the contributions to the "Dictionary of National Biography," have also been subjects of inquiry.

Department of Clinical Research.—This will now be concerned both with the military cases of heart disorder at Colchester as well as with the disabilities due to flying at Mount Vernon.

Army Medical Statistics.

Work in this field has grown to enormous proportions, demanding a clerical staff of 103 persons. Since Jan. 1st, 1917, the War Office has provided the salaries of typists and sorting clerks while the Research Committee has supplied the staff itself and other resources. The records will form the statistical basis of the medical history of the war and, in addition, a source of essential facts for the prompt settlement of all claims for pensions and allowances. This fact in itself entitles to a grant of public money. The records have already been used in tracing the after-history of large groups of cases of gas-poisoning, nephritis, gunshot wounds of the chest, and aneurysm. A military officer of high standing has been appointed to represent the Committee in France, with the result that a general system of records has been evolved with complete success. In place of the case-sheet the Army field medical card has been altered to form a continuous diary of each casualty's clinical history while overseas, which returns with him to the United Kingdom for the information of any medical officer into whose hands he comes. This card is the same size as the Research

[1] To be obtained through H.M. Stationery Office. Price 6*d*.

Committee's index cards and can be filed with them. Note-taking forms and blank diagrams have been supplied by the million, enabling special records to be kept of special subjects such as abdominal surgery, head and chest wounds, fractures of bones, and injuries to joints. A pathological artist has been engaged to assist the verbal descriptions of important injuries. Mobile laboratories for bacteriological or chemical work have been further extended and opportunities afforded of throwing light on problems of military and medical importance—e.g., in the study of changes in the circulation after severe wounds and operations.

Decentralised Work.

The report considers in detail a number of headings under which special research work has been aided at civil and military hospitals and ambulances. Some of these are: the disinfection of drinking-water, the chemistry of bacterial growth, typhoid and paratyphoid infections, dysentery, cerebro-spinal fever, spirochætal jaundice, trench nephritis, the medical problems of flying. These summaries include a large part of the most important work of the Committee and work which gives great promise for the future, but they do not lend themselves to further abstraction, and this is the less necessary as many of the results recorded have been published in our columns during the last 12 months. The report concludes with an acknowledgment of the valued help and coöperation of the United States of America. On behalf of the National Research Council at Washington, Dr. H. D. Dakin gave to the Committee valuable service in France and the Mediterranean, and after his return to New York is still serving as a personal link between the two organisations. The Rockefeller Institute for Medical Research, in the person of its director, Dr. Simon Flexner, has also reciprocated, and Professor W. B. Cannon, of Harvard, and Professor Tilestone, of Yale, are in this country collaborating with the British staff. This growing coöperation for the advancement of medical knowledge between the English-speaking countries is a fortunate event, and one fraught with great promise.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Inter-Allied Surgical Congress.

AT the third Inter-Allied Surgical Congress, which sat from Nov. 3rd to 8th at the Military Section of the Val-de-Grâce, under the presidency of M. Justin Godart, Under Secretary of State for the Service de Santé, *six questions* were raised on which numerous conclusions were based, some of them of great importance. With regard to the *first*—secondary and delayed complications of wounds of the brain—surgeons agreed that delayed infection of such wounds is much rarer than was commonly supposed; that organic disturbances following wounds of the brain, e.g., hemiplegia, monoplegia, aphasia, visual disturbances, frequently have a tendency to spontaneous improvement; and that epilepsy, if amenable to surgical intervention when a foreign body or splinters of bone are present, is not so in other cases. In cases of cerebral hernia lumbar puncture should be avoided during the acute febrile phase in order to avoid the possible dissemination of a local infection. Foreign bodies tolerated by the brain may be left. Cranioplasty is only indicated in cases where the extension of the cicatrix is the sole cause for the symptoms observed, except in the frontal region for æsthetic purposes. The *second* question dealt with the later results of treatment in the case of fracture of the shaft of the femur. It has long been generally recognised that results are only middling as regards the extent of the lesions, the insufficiency of reduction and of its maintenance, and especially as to infection of the focus. A primary sterilisation of the wound is the chief factor to realise. Stiffness of the joints of the knee, hip, and foot can be avoided by early movement. Adherence of muscles to callus is the origin of many disturbances of function necessitating freeing by surgical methods. Strongly marked deviation is amenable to ostectomy with resection of the callus if there is osteomyelitis. The *third* question referred to operation for injuries to nerves. The Congress admitted that the ultimate results are generally middling, especially in the case of total lesions, and when the operation takes place among suppurating tissues. Primary suture of a nerve in a *milieu* rendered aseptic by modern methods has given better results. Functional recuperation is slow, occupying months or even years, a fact which must be taken into consideration in working out compensation. The treatment of fracture of the joints (*fourth* question) has made great progress since primary sterilisation has been the object aimed at, and operative measures initiated within 10–12 hours. Comminution of the epiphysis is to be treated by gouging out and cleansing followed by immediate suture of the joint. Early resection is only indicated in exceptional cases where severe comminution is present. Primary amputation is limited to cases of extreme contusion with destruction of the principal artery. Immediate active movement gives better results than immobilisation. The *fifth* question deals with the treatment of chronic osteomyelitis, which should be mainly preventive and completed either by immediate closure of the wound after removal of all sequestra or by chemical sterilisation with secondary autoplasty. With regard to thoraco-abdominal wounds (*sixth* question), the Congress gave special attention to wounds of the diaphragm. Radioscopic examination is necessary to recognise hernia of the abdominal organs and determine the displacement of the heart. Operation is nearly always indicated, and a transpleural route by way of the thorax is generally to be preferred, associated with laparotomy when desirable.

Frostbite as a Factor in the Development of Tetanus.

Inspector-General Vincent, professor at the military department of the Val-de-Grâce, discusses in a note to the Academy of Medicine the favourable action exerted by cold and frost-bite upon the development of tetanus. The fact has long been recognised by French military surgeons. Larrey showed after the battles of Prague, Lützen, and Bautzen that exposure to severe cold at night was followed by an abundant crop of tetanus among the wounded men brought in. Before the war Dr. Vincent showed by experiment that tetanus might appear several months after the entrance of the germ when the infected part was placed in ice. More recently he established the fact in guinea-pigs that local, even more than general, humid cold is a condition favourable to the rapid development of tetanus. He observed the division of tetanus bacilli taking place in the infected limb two hours after being held under a continuous jet of cold water. Tetanic symptoms appear after a very brief incubation and rapidly kill the guinea-pig, sometimes with splanchnic phenomena. Similar conditions—low air temperature, maceration by water, reduction of temperature of the limb itself, œdema, trophic disturbances in the foot—are present in the trenches in winter. The sowing of the bacillus is effected by means of pre-existent erosions, or excoriations, or by ulceration due to frost-bite itself. At a temperature of 15° C. or below Dr. Vincent has shown that the leucocytes lose their property of taking up tetanus spores, while the dropsical fluid which infiltrates the cellular tissue of the foot and leg forms a perfect nutritive medium for the anaerobe to store up its toxin. Subsequent absorption of the fluid is then the equivalent of an injection of tetano-toxin. For this reason symptoms appear early in acute cases and may outlast the period of passive immunity brought about by injections of serum. Duration of immunity from a single injection does not, in fact, exceed 10–12 days—it is occasionally less—and can only be preserved by repeated injection. The protection afforded by antitetanus serum-therapy has reduced the incidence of tetanus as an infectious complication of wounds in general, but it still occurs under the conditions named in fulminant form in spite of prophylactic injection, as M. Bacri and M. Chavasse have reported. A certain number of their cases had received one, two, or three injections of serum over a period of 10 or 12 days, some receiving large doses. Seventeen patients who received three injections died, the majority of acute tetanus. The occurrence of splanchnic tetanus was noted in three cases.

The Control of Secret Remedies.

The Academy of Medicine has been occupied for several weeks past in discussing the terms of their reply to a question proposed by the Minister of the Interior on the subject of the control of the sale of secret remedies. The situation is completely abnormal in France and has long required definite control. In theory the offer for sale of remedies of unknown composition is strictly forbidden by the law of April 11th, 1803 those who sell or advertise such remedies being liable to prosecution. For many years, however, in

urts have not enforced this law, though it has never tually been repealed. The number of secret remedies now posed for sale is said to amount to 40,000 or more. The lution of the question is not easy at the present time, for , on the one hand, medical men are in general hostile to e offering of pharmaceutical specialities to the public thout medical prescription on the grounds of the grave nger to the public health and the prejudice to legitimate edical practice, on the other hand the sale of patent edicines represents a huge industry, not only in France elf but also for export, and the gain to the revenue om the taxes imposed cannot be neglected. Manu-cturers of secret remedies naturally have considerable ancial influence, and by publications in the general and edical press they add largely to the publishers' profits, king it difficult or impossible for adverse medical opinion be circulated. These difficulties find an echo in the bates of the Academy. M. Galippe maintained the itimacy of pharmaceutical specialities and the necessity avoiding damage to the large commercial interests which only protected by the secrecy of the composition of their ducts. M. Léger, spokesman of the committee appointed the Academy to study the question, concluded in favour a compromise. The sale of pharmaceutical specialities uld be authorised only after examination by a special nmittee of the Academy, the exact formula being deposited h the Academy, the School of Pharmacy, and the ncil of Hygiene. M. Bourquelot, professor at the School Pharmacy, demands, on the other hand, the reinforce-nt of the prohibition of the law of 1803. He suggests t preparations of genuine interest have nothing to fear m the publication of their formulas, still less the special nds of products of definite chemical composition, alkaloid ther, the purity of which can only be obtained by manu-ture on a large scale, and is vouched for by the name of firm. Publication of the composition could only damage rious commodities sold to the public without medical mmendation on specious advertisement. M. Bourquelot plies a powerful argument in support of his view when he nts out that, though the law is not enforced in France connexion with specialities of home manufacture, it is lied in the case of imported foreign products, no secret edy being admitted by the French Customs officials. If sale of secret remedies were now legalised it would be ossible to continue the prohibition of foreign specialities. y foreign countries which prohibit the import of secret edies, and therefore only admit French preparations ch give the formula on the label, nevertheless offer a ly market for some of them. The discussion is not yet ed, but it is quite probable that the Academy will pro-nce in favour of protecting genuine remedies, while the ibiting the sale of those whose spurious composition ires the suppression of the formula.

URBAN VITAL STATISTICS.

(Week ended Dec. 8th, 1917.)

glish and Welsh Towns.—In the 96 English and Welsh towns, with ggregate civil population estimated at nearly 17,000 000 persons, nnual rate of mortality was equal to 12·4, against 12 3 and 11·9 per in the two preceding weeks. In London, with a population ding 4,000,000 persons, the death-rate was 13·1, or 1·1 per 1000 above recorded in the previous week; among the remaining towns ates ranged from 5·2 in Enfield, 6·1 in Coventry, and 6 2 in West wich, to 18 8 in Hastings 19·8 in Rotherham, and 20·4 in ton. The principal epidemic diseases caused 280 deaths, which sponded to an annual rate of 0·9 per 1000, and included 108 from es, 60 from diphtheria, 58 from whooping-cough, 36 from infantile rœa, 11 from scarlet fever, and 7 from enteric fever. Measles d a death-rate of 2·7 in Acton, 2·9 in Leicester and in Bury, 3·2 ighton, and 6·0 in Dewsbury. The 1351 cases of scarlet fever and of diphtheria under treatment in the Metropolitan Asylums itals and the London Fever Hospital were respectively 7 above 2 below the numbers remaining at the end of the previous week. e deaths from all causes in the 96 towns, 156 resulted from ice. The causes of 33 deaths were uncertified, of which 6 were ered in Birmingham, 5 in Liverpool, and 2 each in Dudley, ngton, Manchester, and Barrow-in-Furness.

ch Towns.—In the 16 largest Scotch towns, with an aggregate ation estimated at nearly 2 500,000 persons, the annual rate of lity was 12·9 against 12·2 and 12 5 per 1000 in the two preceding . The 296 deaths in Glasgow corresponded to an annual rate of er 1000, and included 7 each from whooping-cough and infantile rœa, 5 from diphtheria, 3 from measles, and 1 from enteric fever. 2 deaths in Edinburgh were equal to a rate of 9·7 per 1000, and led 2 from infantile diarrhœa.

h Towns.—The 141 deaths in Dublin corresponded to an annual f 18 4, or 2·8 per 1000 above that recorded in the previous week, cluded 3 each from measles and whooping-cough, and 1 each iphtheria and infantile diarrhœa. The 103 deaths in Belfast were to a rate of 13·7 per 1000, and included 2 each from enteric fever, es, and whooping-cough, and 1 from infantile diarrhœa.

Correspondence.

"Audi alteram partem."

INTRAMUSCULAR INJECTIONS OF QUININE BIHYDROCHLORIDE IN SIMPLE TERTIAN MALARIA.

To the Editor of THE LANCET.

SIR,—In the *Annals of Tropical Medicine and Parasitology* (June 30th) issued by the Liverpool School of Tropical Medicine, in an article under this title Sir Ronald Ross is quoted as having written as follows:—

"I really do not know why this form of medication is continued in malaria. It appears to me that the only cases in which intramuscular injection is called for are those in which intestinal absorption may be checked by very marked intestinal affections, or where patients are not to be persuaded to take the drug by mouth at all. For severe cases, to judge by experimental evidence, the subcutaneous injections are worse than useless."

It is with great diffidence that I venture to disagree with such a master of tropical medicine as Sir Ronald Ross, but the experience of many years' treatment of malarial fever in one of the Federated Malay States (Perak) is very much in favour of the intramuscular injection of quinine. This fact in the treatment of the more obstinate forms of malarial fever is recognised by all medical officers practising in this part of the world. It is obvious that no one would exchange such a simple way of giving quinine as per os for a method which involves the boiling of the syringe, the solution, the sterilising of the patient's skin, and the discomfort inflicted unless there was good reason for it. Patients, especially Europeans, have confidence in the intramuscular method and constantly of their own accord ask for it, as they have been taking quinine by the mouth in 10 to 15 grain doses daily with no good results. The hospital returns show that the prevailing type of malarial fever in Perak is subtertian. In 1916 in the various Perak Government hospitals the microscopical examination of the blood gave the following admissions for malarial fever: Benign tertian, 1098; quartan, 202; subtertian, 4992; mixed infection, 198; type undiagnosed, 3370 (most of these cases had been taking quinine before admission, and no parasites were to be found in the peripheral blood). There were 599 deaths from the different types of malaria. The above figures do not include the many estate hospitals existing in Perak.

The hospital routine treatment of malarial fever is as follows:—

On admission to hospital, if subtertian parasites are found, gr. x. of quinine bihydrochloride in 12 mins. of water is given intramuscularly twice a day, until the pyrexia is controlled, generally in two or three days, when the injections are stopped, and 30 grains a day given by the mouth for 14 days. Often the two methods are combined, but the trouble is to get a patient to remain in hospital after his temperature has been normal for one week. If he insists on leaving he is instructed to take quinine 20 grains for two weeks and then 10 grains for at least three months, but whether he follows this advice is extremely doubtful. Relapses are, I regret to say, frequent, but this is probably due to reinfection (as parasites have again been found in the peripheral blood) as much as to inefficient treatment by quinine.

The recent excellent article, the Diagnosis and Treatment of Malaria, by Captain David Thomson, published in the *Journal of the Royal Army Medical Corps*, wherein he recommends 30 grains of the bromide of quinine for three weeks, is more or less followed by us, but I have grave doubts whether our patients will be able to stand the 30-grain doses for so long as three weeks, as well as his did in Liverpool. Malarial gastritis is a frequent complication in our fever-stricken patients. In the treatment of benign tertian 30 grains per diem by the mouth of the bihydrochloride for two weeks is the only form of treatment followed; it is found that quinine so given is sufficient to control the fever, but notwithstanding the continuous treatment afterwards by big doses, 15–20 grains, for months, our experience that relapses in this type of fever are extremely frequent, more so than in any other form. In fact, I look on benign tertian as the most obstinate of relapsing malarial fevers. The intravenous injection of quinine is reserved

for big subtertian infections with brain complications. In children and infants suffering from malarial convulsions quinine per rectum has been found satisfactory. Such is the treatment of the malarial fevers in Perak. A drug, however, is urgently needed to stop the relapses: galyl + quinine is now on trial, but too short a time has elapsed or too few cases treated for any opinion to be yet formed.

We all out here look up to the intramuscular injection of quinine as our sheet-anchor in all obstinate and chronic forms of malarial fever, and generally find we have not placed our trust in vain. With careful asepsis no bad results have generally been observed. Occasionally an abscess has developed at the site of injection, but this has been due to faulty technique and sometimes to the low vitality of the tissues. In a small hospital in Taiping with 60 beds for Europeans, Eurasians, and the better-class Asiatics, 672 intramuscular injections of quinine were given during the last 12 months; abscess formation 4, tetanus nil. The quinine is injected into the gluteal region about 1 inch below the crest of the ilium, and is always given by a European sister or by the medical officer himself. The patient's name is entered into a special book, and the operator signs his or her name and is made responsible for any bad results. Figures for the other hospitals have not been obtained. How the intramuscular injection of quinine acts I am not prepared to state; perhaps it is due to a slow, continuous absorption of the salt or to an attack in the rear, the quinine getting into the blood current of the spleen and bone marrow easier from this direction. But in whatever way the results are obtained, until some other better method or drug is suggested or discovered the intramuscular treatment of malaria by the rank and file of the profession in this State will certainly be continued.

The treatment of malarial fever by 30 grains daily for three weeks, as suggested by Captain David Thomson, is no doubt effective in a non-malarious country; but whereas in the tropics reinfection is the rule, such happy results as he obtained in Liverpool cannot, I fear, be our lot. The obvious reply to this is to get rid of your mosquitoes—but that is another story.—I am, Sir, yours faithfully,

STEPHEN C. G. FOX, M.R.C.S., L.R.C.P. Lond.,
Senior Medical Officer, Perak, F.M.S. Government
Oct. 11th, 1917. Medical Service.

THE RETRACTION OF BLOOD CLOTS.

To the Editor of THE LANCET.

SIR,—When reading Captain W. d'Este Emery's interesting article on the Retraction of Blood Clots in your issue of Oct. 20th, I was surprised at the small percentage of serum yielded in many of his experiments, varying from 0 per cent. in large-diameter tubes to nearly 60 per cent. in 1 mm. tubes, his best—the 9 mm. tubing giving only 6·3 per cent. to 21·5 per cent. of serum. Later, however, with this same tubing and more suitable temperature conditions, he obtained 50 per cent. and 56·6 per cent. Captain Emery deduces that the narrow tubings of 1 mm. and 3 mm. give far better results than larger diameter tubes—and that conditions of temperature are also of great importance. With the latter conclusion I agree, but my own experience leads me to doubt the former.

In the course of the last two years I have prepared comparatively large quantitives of agglutinating serum for meningococcus from rabbits and have used several hundreds of these animals in making the sera in batches of about 150 c.c. at a time. The animals are bled to death through the carotid into large sterile test-tubes of 75-100 c.c. capacity and 38 mm. diameter, or more than double the diameter of Captain Emery's largest tubes. The blood is then incubated at 37° C. for one hour, the clot separated from the tube for about three-fourths of its circumference by a sterile wire, and after remaining at room temperature for 24 hours the serum is poured off. Previously to reading his paper I had not troubled to ascertain the proportion of serum to clot which I obtained, but I felt sure when reading it that I got larger quantities by my method than his deductions would suggest were possible. Major A. S. G. Bell, R.A.M.C. (late Fleet-Surgeon, R.N.), has recently assisted me in preparing this serum, and, in fact, at present is doing the major portion of this work; at the first opportunity, therefore, we weighed the clot and serum of a rabbit bled by this method and found that we had obtained about 76 per cent. serum and 24 per cent. clot. This result was sufficiently surprising, and we therefore measured a series of other bleedings with the following average results.

Twenty-two rabbits produced 672 c.c. of serum and 414 grammes of clot, or about 64·2 per cent. of serum and 35·8 per cent. clot by volume. It should be noted that these bloods were collected in the agar-lined tubes recommended by Dr. Gardner, and which tend, as Captain Emery shows, to prevent a maximum output of serum; nevertheless, the average percentage of serum from over a litre, in the aggregate, of blood is higher than the best figure Captain Emery gives. The 76 per cent. serum from the first rabbit was got from a plain tube without agar, and four rabbits were therefore bled into plain tubes, with the result that these five rabbits gave 188 c.c. serum and 104 grammes clot, or 66·7 per cent. and 33·3 per cent. respectively by volume. The total for 27 rabbits, therefore, is 64·7 per cent. serum and 35·3 per cent. clot.

Captain Emery does not say whether the percentage is by weight or volume, but I show it by volume, taking the specific gravity of clot as 1100. I noticed some time ago that the yields of serum from different rabbits varied considerably, and this I attributed to the known disproportion which exists between corpuscular and fluid contents of the same rabbit's blood at different periods—i.e., a variation in fluid percentage. We generally find a better yield of blood shortly after the morning meal, and accordingly try to bleed our animals in the forenoon. Captain Emery used human blood which does not show this variation, and this may possibly account for the disparity in our experiences. One thing, at least, is certain, that to obtain large quantities of serum by using small tubes is impracticable, for in order to procure 100 c.c. of serum, using Captain Emery's figures, some 230 yards of 1 mm. tubing, or about 50 yards of 3 mm. would be required. Some other means of obtaining maximum yields must therefore be found, and the method we are now using seems to give satisfactory quantities.

I am, Sir, yours faithfully,

Central C.S.F. Laboratory, Caxton-street, S.W. Nov. 23rd, 1917. T. G. M. HINE, Major, R.A.M.C.

THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—Of the many fallacies which beset the observer of tuberculosis statistics, not the least is the prevailing but inaccurate notion that sanatorium treatment is of itself a complete treatment of pulmonary tuberculosis and that ultimate mortality rates are an index to its value. It is true that the duration of life after treatment might afford a fair criterion of the efficacy of such part treatment, but mortality may prove nothing about the results of residence in a sanatorium except that a short stay has not achieved the impossible. After all one does not estimate the value of a "preparatory" school training by the numbers of old boys who, say, 15 years later receive an honorary LL.D.

The reason of this fallacy is clear: most of the sanatorium results on which current tuberculosis traditions were based were originally obtained from isolated institutions, either private or endowed, in connexion with which preliminary treatment was rare and after-treatment unheard of. The cases might or might not be chosen from artisan populations, but at all events they were chosen without any definite relation to the numbers of consumptives in any one district, county, or country. Now what possible light can these figures shed on the mortality rates or duration of life rates for the consumptive working population as a whole? Speaking as a past member of the staff of Midhurst, I cannot see that the Midhurst results prove anything about tuberculosis except that in variously severe cases the results vary. The patients were chosen from different sections of society and from different parts of the country, the bacillary cases were more often advanced than early, and from one-third to one-half of the non-bacillary cases were at any rate arrested on admission if not nearly so. Yet figures from these and similar institutions are often used to form the basis of deductions as to the value of the sanatorium for consumptive workers, of whose treatment it only forms a small part. Is it not time that such statements should give place to the reports of tuberculosis schemes, whose schemes, either rural or urban, give a comprehen-

idea of the incidence, treatment, and after-results for any one county or city area?

Perhaps, therefore, I may be pardoned the rôle of showman in again drawing the attention of your readers to the results obtained at the Birmingham Tuberculosis Centre. An illustration:—

A consumptive in Birmingham is no sooner notified than he is called up for examination, classified, and if found positive is sent to one of the many sanatoria and hospitals set aside for early, moderately advanced, or late cases respectively. During his absence various preventive measures are taken and all suspects or contacts dealt with. On his return he may continue treatment at the centre for as long as 18 months to two years; later he may return to a sanatorium for shorter spells of treatment if necessary, in fact, from the time of his notification he is shepherded until his recovery or death. Yet although patients may be kept on the books for three, five, seven, or ten years, there is no lack of sanatorium beds in Birmingham, no long waiting list, and the results for *all* cases, both immediate and afterwards, are far more gratifying than those of any sanatoria or semi-detached schemes, whether for private or public patients, so far noted in Britain. To take one point only—i.e., "bacillary loss"—in the Birmingham Sanatorium set apart for early cases, 57 per cent. lost their bacilli during 1916, whilst during the same year of 555 *cum leting* treatment at the centre after from six months to two years, 70 per cent. had lost their bacilli (as tested by sedimentation methods) and this in spite of a prolonged return to ordinary working and social life.

The fact is that with a certain type of bacillary case in artisan populations a relatively short stay in a sanatorium, with after-treatment at a dispensary, is all that is necessary to secure complete arrest. It is not suggested that this scheme is perfect; there is ample scope for modification and improvement, but the point I should like to insist on is that before dogmatising on the duration and results of treatment, before comparing the results in wealthy and artisan communities, and, above all, before considering whether sanatorium treatment "has utterly failed," or "partly failed," or succeeded, it would be well to ascertain whether, in fact, every county or large town has got a passable scheme, and, if not, to insist on the establishing of one. Five years afterwards the discussion on results might be reopened with profit.

I am, Sir, yours faithfully,

EDWARD G. GLOVER, M.D. Glasg.

Birmingham Municipal Sanatorium, Cheltenham, Nov. 23rd, 1917.

SIR RICHARD CROFT AND THE CASE OF THE PRINCESS CHARLOTTE.

To the Editor of THE LANCET.

SIR,—May I trespass a little further upon your space by stating how it was that Sir Richard Croft left Oxford without a degree? The explanation is given in the *Gentleman's Magazine*, vol. lxxxviii. Practising in the University city at that time was a well-known physician, Sir Charles Nourse. This gentleman had given notice of retiring. To succeed him Croft went to Oxford as Nourse's assistant. Soon after Croft's arrival, however, Nourse changed his mind and Croft returned to London.

I am, Sir, yours faithfully,

Holland Park-avenue, W., Dec. 9th, 1917. S. D. CLIPPINGDALE.

SUCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—May I beg a few more lines of your space to answer, as shortly as I can, two questions which Dr. W. M. Crofton puts to me in his courteous reply to my letter in your last week's issue. Dr. Crofton asks, first, whether I think it possible by isolation to cut off entirely the sources of tuberculous infection. I do not. Leaving on one side the bovine sources of infection, I could only hope to diminish by partial isolation the number of sources of infection and thus help on the disappearance of tuberculosis, just as, we learn on the authority of Robert Koch[1] and Sir Arthur Newsholme,[2] was done in the case of leprosy in Norway. If tuberculosis continues to decline, as surely it must when happier times return, we may look forward to the isolation of a continually increasing proportion of dangerous cases, and consequently an effect which will grow year by year until it succeeds in stamping out the disease.

Dr. Crofton next asks whether I do not think his "proposal to supplement this measure by an attempt to produce by immunisation a normal resistance in everyone to the tubercle bacillus worthy of consideration and trial." Candidly, I do not. I have already given my reasons at length, and can only add that tuberculosis is not one of those diseases which confer any marked immunity, like so many others (hence its chronic course and bad prognosis when well established). We have received little encouragement from immunisation experiments in animals; and it is necessary that public effort should be concentrated on the one main thing and not be side-tracked by others of doubtful utility.

I am, Sir, yours faithfully.

Cambridge, Dec. 10th, 1917. LOUIS COBBETT.

[1] Nobel Lecture, THE LANCET, 1906, i., 1449.
[2] The Prevention of Tuberculosis, p. 265.

COLLOSOL COCAINE.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 1st appears an article under the above heading by Dr. G. Barger, Dr. H. H. Dale, and Miss F. M. Durham (from the Department of Biochemistry and Pharmacology, Medical Research Committee), referring to statements published in THE LANCET and the *British Medical Journal*, embodying reports on this preparation by Professor R. Tanner Hewlett, Professor W. J. Simpson, and Dr. John Eyre, who found marked absence of toxicity and duration of anæsthesia in the samples submitted to them by us.

Scientific controversy on the difference of findings between these authorities must be deferred, as space will hardly be available for it together with the serious matters affecting personal honour and confidence which arise from that article, containing as it does, statements of fact and insinuation and indication of procedure which concern not only the persons above-named but also everyone connected with the "makers." Important omissions of material circumstances render it still further misleading. Had the authors of the article—as might be gathered from absence of mention to the contrary—purchased or otherwise acquired in the market, standard samples of collosol cocaine, for examination, their procedure and conclusions (if accurate) might merit justification, but as they omit to disclose the fact that they used various samples obtained from us, under circumstances which I mention later, a false impression is induced. Such impression is cumulatively aggravated to serious import by five separate remarkable comments in the article.

Firstly, there is mention of "a trap in which experienced observers seem to have been caught." True, this is followed by the remark, "We wish to make it clear, however, that we have no reason whatever to doubt the bona fides of the manufacturers"; and Sir William Crookes and the other scientists connected with the Crookes Laboratories will doubtless appreciate this testimony to the integrity of "the manufacturers," even at the possible expense of their intelligence.

The hypothetical criticism appearing in the article as the inspiration of the authors concerning "the other collosol alkaloids" should be tested in the light of the fact that I informed Dr. Dale at the outset that only an infinitesimal portion of the quinine used was found to be recoverable from collosol quinine by laboratory tests, and had he not specifically declined to examine anything other than the cocaine preparation, I would have emphasised the information, already given to members of the medical profession, that collosol quinine has no effect upon the parasite of malaria. The effect produced by publication of the comment without reference to our disclaimer, is obvious.

In the next place, the three authors of the article are responsible for the extraordinary and wholly inaccurate statement that the manufacturers "have withdrawn collosol cocaine from their list on hearing from us of our conclusions." No such withdrawal has been made, nor do the clinical results warrant it, but in fact we had no opportunity of even seeing—let alone considering—those "conclusions," till they appeared in THE LANCET article in which this statement as to withdrawal is made, whilst no data have even yet been furnished us to lead to such a course, nor to refute the detailed tests and reports of Professor Hewlett, Professor Simpson, and Dr. Eyre. Further, this definite statement of withdrawal appears simultaneously with a letter from the secretary of the Medical Research Committee in the *British Medical Journal*, which indicates that he, at any rate, had reason to doubt its accuracy, from perusal of my letter to that journal of the previous week, and he more accurately states that Dr. Dale

"advised them in their own interest to withdraw this preparation from their list." Then follows the remark, "This communication was of a verbal and confidential nature," but no reason is assigned for breach of the confidence.

Again, since the authors admit testing *five* different samples, exhibiting different behaviour, it is apparent that no standardised preparation was being dealt with. Dr. Dale particularly requested me to provide him with samples from different batches (and these included one which gave no anæsthesia at all), in a letter in which he said, "Any information which you are able to give as to the method of preparation would be helpful and interesting, and information so furnished by you would be regarded as confidential." Little did we suspect that under such circumstances, without affording us any opportunity of seeing the reports and conclusions, Dr. Dale would adopt the remarkable course of submitting them without our cognisance to Dr. Eyre, whom we had professionally instructed to make the preliminary tests and reports, and with the result that Dr. Eyre writes me that from the evidence Dr. Dale has put before him he is satisfied that he has been misled.

Undoubtedly such would be the case when he read conclusion No. 3, which states: "The quantity of cocaine chemically recoverable from each of the same three samples was approximately 0·24 per cent. instead of 1 per cent. *as indicated.*" The all-important fact that I not only indicated, but expressly informed Dr. Dale when giving him the samples, that only a portion of the cocaine was recoverable, and that the percentages named represented the amount of cocaine used in preparation, is withheld, with the effect that other members of the medical profession have interpreted that "conclusion," as did Dr. Eyre, with equally disastrous results. Its reasonable interpretation is that credit is due to the authors of the article for discovering that only 0·24 per cent. of the cocaine is recoverable in a preparation "indicated" as containing 1 per cent. of recoverable cocaine, either through ignorance or design, and the fact of my previous information to the contrary and the consequent discussion is suppressed. Very serious results have already ensued, and I have through your columns to seek an explanation from the authors of the article you published.

I am, Sir, yours faithfully,

LEWIS STROUD, M.A. Oxon.

The Crookes Laboratories, Dec. 10th, 1917.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

F. G. Hunt to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Lieut.-Col. A. W. N. Bowen, D.S.O., relinquishes the rank of temporary Colonel on re-posting.

Lieut.-Col. S. A. Archer to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. A. R. Aldridge, C.S.I., C.M.G., relinquishes the acting rank of Colonel on re-posting.

Temp. Col. P. W. G. Sargent, D.S.O. (Lieutenant, R.A.M.C., T.F.), relinquishes the rank of temporary Colonel and to be temporary Lieutenant-Colonel on re-posting.

Major P. J. Marett relinquishes the rank of temporary Lieutenant-Colonel on re-posting, and to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Major Walter A. S. J. Graham is seconded for employment under the Ministry of National Service.

Temp. Major (acting Lieut.-Col.) R. Wilson, C.A.M.C., relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Temp. Major E. D. Macnamara (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Temp. Capt. F. V. Woodbury, C.A.M.C., to be acting Major.

Temp. Capt. (acting Major) A. MacKay, C.A.M.C., relinquishes the acting rank of Major.

Temp. Hon. Capt. A. M. Westwater to be temporary honorary Major.

To be temporary Captains: Temp. Lieut. H. T. H. Butt, A. Ross, C.A.M.C., C. G. Monro, W. T. Smith, A. C. Falkiner, J. N. Glaister.

To be honorary Captains: G. K. Allan, late temporary Captain; C. H. Evers, late temporary Captain.

Temporary Lieutenants to be temporary Captains: C. J. C. Macquarie, M. J. Ahern, C. W. Forsyth, R. Stansfeld, J. H. Iles, E. A. D. Maconochie, T. J. Lloyd, G. N. Kirkwood, A. W. Brodribb, G. W. Bury, F. B. Macdonald, P. A. Creux, J. F. H. Stallman, T. Marron.

Temp. Hon. Lieut. W. F. Matthews, of St. John's Ambulance Brigade Hospital, to be temporary honorary Captain.

Temp. Capt. R. H. Lipsey, Canadian Army Dental Corps, reverts to the temporary rank of Lieutenant on attachment to the R.F.C.

To be temporary Lieutenants: F. C. Watson, R. J. MacMillan, A. S. Moorhead, F. Green, S. Spencer, C. Murphy, A. R. P. Scott, J. C. Johnson, G. C. Cossar, P. S. Clarke, F. J. Power, G. Ferguson, R. O'Connor, A. Bryans, H. S. Gabb, W. Crerar, H. Barber, F. Joyce, E. F. Lawson, M. J. O'Flynn, J. M. McCormack, A. G. Heron.

To be temporary honorary Lieutenants: G. H. V. Hunter, H. A. Haskell, C. S. Gilman.

Officers relinquishing their commissions: Temp. Majors: J. C. Briscoe, J. Kerr, W. A. Brend, J. F. Porter, T. M. Martin, F. L. Odlum. Temp. Hon. Major B. Crothers. The undermentioned on appointment under the Ministry of National Service: Temp. Col. J. Galloway, C.B. Temp. Majors: N. S. Manning, W. B. Edwards, A. G. Andrews. Temp. Capts.: H. Owen, J. J. Robb, W. R. Reith, H. Bates, E. L. Jenkins, H. P. Gaston, J. C. Fisher, J. D. C. White, W. G. Gilletley, J. Davies, T. W. E. Moreton. Temp. Lieuts.: C. Alison, W. Johnstone.

Temp. Capts.: J. E. Knox, R. I. Harris, A. R. Riddell, T. C. Routley, J. D. Wilkinson (on account of ill-health contracted on active service) T. J. Simpson, F. Hernaman Johnson (on account of ill-health, and is granted the honorary rank of Captain), C. A. Dupont (on account of ill-health contracted on active service), C. A. Keegan (on account of ill-health), E. T. Jones, J. R. Polson, W. W. Livingston, J. B. Orr, D.S.O., M.C., D. E. Scott. Temp. Lieuts.: H. V. O'Shea, O. H. Woodcock, S. Y. Walsh, J. A. A. Bailey, M. J. Walsh, R. G. Griffin, J. G. Fleming, W. Brennan, A. W. K. Straton.

SPECIAL RESERVE OF OFFICERS.

W. B. Buer to be Lieutenant.

K. J. A. Gillanders, from Glasgow University Contingent O.T.C., to be Lieutenant.

TERRITORIAL FORCE.

Lieut.-Col. (Brevet-Col.) F. H. Westmacott is restored to the establishment.

Major T. A. Barron to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Major (acting Lieut.-Col.) T. A. Barron relinquishes his temporary rank on ceasing to command a Field Ambulance.

Major (acting Lieut.-Col.) A. E. Hodder, D.S.O., relinquishes his acting rank on ceasing to command a Field Ambulance.

Major A. E. Hodder, D.S.O., to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Major A. Milne-Thomson, C.M.G., is seconded whilst holding an appointment as Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Major L. P. Demetriadi resigns his commission on account of ill-health contracted on active service, and is granted the honorary rank of Lieutenant-Colonel.

Major (temp. Lieut.-Col.) G. A. Troup relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. L. A. Rowden, Capt. W. R. Higgins, Capt. R. F. Fagge, Capt. H. H. Markham, and Capt. M. D. Wood are restored to the establishment.

Capt. P. G. Phillips and Capt. C. R. Handfield-Jones resign their commissions on account of ill-health.

Capt. (temp. Major) R. S. Taylor, D.S.O., to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. H. F. Wilkin, M.C., to be acting Lieutenant-Colonel, whilst commanding a Field Ambulance.

Capt. (acting Lieut.-Col.) H. F. Wilkin, M.C., relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. (acting Lieut.-Col.) H. B. Low, M.C., relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. (temp. Major) A. C. H. McCullagh to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. (temp. Major) J. R. Pooler to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. J. P. H. Davies relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. H. A. P. Robertson, from a Field Ambulance, to be Captain.

Capt. (temp. Major) E. R. Carling relinquishes his temporary rank, and is restored to the establishment.

Capt. P. W. Thompson resigns his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

H. J. Shanley, late Captain, R.E. (T.F.), to be Lieutenant.

Cadet G. L. Matthews, from the O.T.C., to be Lieutenant.

To be Captains: Lieut. G. L. Matthews and Lieut. H. J. Shanley.

The undermentioned to be temporary Captains, Hampshire Medical Volunteer Corps: A. E. Clark (late Lieutenant, R.A.M.C.), A. C. D. Newton (late Lieutenant, R.A.M.C.).

Medical Officer and temp. Capt. A. D. Willcocks, from 1st Battalion, to be Medical Officer and temporary Captain, 3rd Battalion, Somerset Volunteer Regiment.

J. McC. McCarthy to be Medical Officer, with the temporary rank of Captain, 1st Battalion, Shropshire Volunteer Regiment.

T. W. Hinds to be temporary Captain, Kent Medical Volunteer Corps.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The November issue of this journal opens with a paper on Skin Diseases and their Treatment under War Conditions, which was read before the Section of Dermatology of the Royal Society of Medicine in April last by Major H. MacCormac. It is well illustrated, four plates being in colours, and deals with a problem which is of considerable importance from the point of view of man-power. Dietetic Fallacies in Connexion with Glycosuria and Albuminuria is the subject of an address by Major Herbert French, and the same issue contains the first part of a Report upon the Bacteriological Examination of One Thousand Soldiers Convalescent from Diseases of the Dysentery and Enteric Groups, by Captain William Fletcher. A joint Preliminary Clinical Report on Trench Fever, by Major W. Byam, Captain Lyn Dimond, Captain V. E. Sorapure, Lieutenant R. M. Wilson, and Lieutenant A. D. Peacock, essays to show that the well-known types of trench fever, with later a stage of slight pyrexia, headaches, anæmia, splenic enlargement, and increased irritability of the nervous system are one disease in succeeding stages, the general unfit man being most susceptible to the development of the chronic type; and, further, that this nervous irritability is the cause of a certain proportion of the D.A.H. cases now arising in France and other theatres of war. Preventive treatment resolves itself into a careful study of the prodromata and the search after means of eradicating the infection before it has gained the upper hand. The authors appeal to other workers to test the value of the various anti-protozoal compounds. "We have some no data as to the value of acriflavine by mouth," they remark, "and one of us, in order to ascertain its effect on the stomach, has taken 10 cubic centimetres of the solution four-hourly for the past six days without being aware of any discomfort."

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. N. Griffiths, R.A.M.C., qualified at Sydney, New South Wales, in 1905, and held appointments at the Women's Hospital, Sydney, and at the Public Hospital, Perth, Australia. Later he came to England and practised in Welbeck-street, London, and was honorary assistant physician to the Chelsea Tuberculin Dispensary.

Died of Wounds.

Capt. J. O'S. Beveridge, R.A.M.C., qualified at Dublin in 1915, and joined up shortly afterwards.

Previously reported Wounded, now reported Died of Wounds.

Capt. G. Hislop, R.A.M.C., qualified at Glasgow in 1913, and was in practice at Glasgow prior to joining the R.A.M.C.

Wounded.

Capt. D. A. D. Kennedy, R.A.M.C., attached Rifle Brigade.
Capt. W. J. E. Mingie, Canadian A.M.C.
Capt. H. N. Goode, R.A.M.C.
Capt. L. J Hunter, Australian A.M.C.
Capt. F. H. Cleveland, R.A.M.C., attached Hussars.
Capt. T. R. Kenworthy, R.A.M.C.
Lieut.-Col. T. M. R. Leonard, West African Medical Service.
Lieut. R. A. Hosegood, R.A.M.C., attached Royal Scots.
Capt. A. Stewart, R.A.M.C.
Capt. C. O'Malley, R.A.M.C., attached Middlesex Regiment.

Missing.

Capt. R. T. Bruce, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. G. S. Gilbertson, Bedfordshire Regiment, killed in action, second son of Dr. J. H. Gilbertson, of Hitchin, Herts.

Capt. G. R. Nevitt, West Yorkshire Regiment, killed in action, son of the late Mr. J. G. Nevitt, M.R.C.S., of Leeds.

Capt. and Adjt. M. E. Parnell, Indian Cavalry, died of wounds, youngest son of Mr. G. C. Parnell, M.R.C.S., of Forest Hill, London, S.E.

Second Lieut. B. B. Hewat, Royal Field Artillery, killed in action, only child of Dr. M. L. Hewat, of Mowbray, Cape Town, South Africa.

Second Lieut. E. D. Smith, Sherwood Foresters, killed in action, only son of Dr. H. W. Smith, of Pleasley, Mansfield, Notts.

Second Lieut. I. C. Taylor, Royal Scots, killed in action, eldest son of Dr. J. C. Taylor, of Berwick-on-Tweed.

LORD FRENCH'S DESPATCHES.—The volume just issued by Messrs. Chapman and Hall ("The Complete Despatches of Lord French." Price 21*s.* net) in an edition limited to 500 copies, will prove to have historic value. Besides the text of the despatches it contains a complete list of the officers and men mentioned, amongst them no small proportion of the Army Medical Service and Royal Army Medical Corps.

HOSPITAL ACCOMMODATION FOR PENSIONERS.—The Minister of Pensions has appointed a committee including Sir Arthur Newsholme, Mr. J. Smith Whitaker, and Dr. Meredith Richards, with representatives from the War Office, to make a census of hospital accommodation in the country with a view to seeing if it is sufficient to deal with the ex-service men who still require medical or surgical treatment. The first meeting of the committee has been held and a report is expected at an early date.

TRAVELLING MEDICAL BOARDS.—The new Army Council instruction altering the constitution of travelling medical boards directs (1) that the president shall be selected from among the existing presidents or from temporary R.A.M.C. officers who are members of existing boards; (2) that the second permanent member shall be an R.A.M.C. officer selected by the D.D.M.S.; and (3) that the third member shall, in the case of large garrisons, be the commanding officer of a unit not being examined, and in the case of boards which ordinarily visit command depôts or small garrisons a permanent combatant officer (not below field rank) to be appointed by the War Office. The boards will in future undertake reclassification only and have nothing to do with the actual discharge of men from the service.

IMPROVEMENTS IN HOSPITAL ACCOMMODATION IN INDIA.—There are now, including beds for officers, 8115 British war hospital beds, 10,570 Indian war hospital beds, 6480 British convalescent beds, and 13,500 Indian convalescent beds for invalids from field service. Eighteen ocean-going hospital ships have been provided and 11 ambulance (hospital) trains and over 200 motor ambulance cars are now in service in India. Amongst the more notable of the British war hospitals are the Victoria (600 beds), Freeman Thomas (500 beds), Alexandra (618 beds), and the Baroda Hospital for Officers (75 beds), Bombay, the British General Hospital, Deolali (3000 beds), the Deccan War Hospital, Poona (1000 beds), and the Hislop War Hospital, Secunderabad (862 beds). These institutions now compare favourably with hospitals provided at home for casualties from the Western Front.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At a meeting of the Royal College of Physicians of Ireland, on Dec. 7th, it was resolved to invite all officers of the U.S. Army Medical Service stationed in Dublin or its neighbourhood to make use of the College library.

ROYAL INSTITUTION.—The following are among the lecture arrangements at the Royal Institution before Easter: Professor Arthur Keith, Fullerian professor of physiology, three lectures on the Problems of British Anthropology; Dr. Leonard Hill, two lectures on (1) the Stifling of Children's Health, (2) the Climatic Adaptation of Black and White Men; Sir R. T. Glazebrook, two lectures on the National Physical Laboratory; Professor William J. Pope, two lectures on the Chemical Action of Light; and Professor Sir J. J. Thomson, six lectures on Problems in Atomic Structure. The Friday meetings will commence on Jan. 18th, when Professor Sir James Dewar will deliver a discourse on Studies on Liquid Films. Succeeding discourses will be given, among others, by Principal E. H. Griffiths and Professor Sir J. J. Thomson.

APPOINTMENTS IN INDIA.—The services of Major L. Cook, I.M.S., are placed permanently at the disposal of the Government of Bihar and Orissa.—Lieutenant-Colonel C. H. James, C.I.E., I.M.S., is appointed to be Professor of Operative Surgery in the Medical College, Lahore.—Lieutenant-Colonel C. H. Bensley, I.M.S., is appointed Inspector-General of Prisons, Central Provinces.

DONATIONS AND BEQUESTS.—The Royal Dental Hospital has received a donation of 100 guineas from Messrs. Barnato Brothers "in memory of the late Mrs. Kate Joel."—The late Mr. George Fisher Melville, Advocate, of Edinburgh and Springfield, North Berwick, who died in July last, left nearly a quarter of a million sterling to be devoted to the "care and cure of cancer" and to research work in connexion therewith. The trust is in the hands of the Dean of Faculty of Advocates, the Deputy Keeper of the Signet, and the Master of the Merchant Company, the present holders of these offices being Mr. James Avon Clyde, Sir George M. Paul, and Mr. Alexander Darling respectively.—The late Mr. P. Vaughan, of Bristol, has bequeathed £6000 to the Queen Victoria Jubilee Convalescent Home, Durdham Downs, Bristol.

THE WANDSWORTH AND DISTRICT NON-PANEL ASSOCIATION.—At a meeting of medical practitioners of the Wandsworth and District Non-Panel Association held on Saturday, Dec. 1st, it was unanimously resolved:—

That the Wandsworth and District Non Panel Association approves and endorses the resolution of the council of the National Medical Union advising its members and all other non-panel medical practitioners to refrain from attending discharged disabled soldiers and sailors under the "special arrangements" of the Insurance Commissioners, but encouraging treatment in their private capacity; and extends this advice to the case of insured patients in hospitals or homes which receive grants from the Ministry of Pensions or the National Insurance Commissioners.

BRIGHTON HOSPITAL SUNDAY FUND.—The result of the Hospital Sunday collections in Brighton, Hove, and district this year surpassed all expectations. Usually £1000 is collected, but on this occasion an urgent appeal was made

that the total might be at least £1200 in view of the demands of the war upon the various institutions. The balance sheet just issued, however, shows that the total realised was £1527 15*s.* 3*d.*, against £1005 8*s.* 4*d.* in 1916. Substantial increased contributions have in consequence been allocated to 13 local medical charities, the Royal Sussex County Hospital receiving £674 as against £432, the Dispensary £183 as against £118, the Queen's Nurses £144 as against £90 10*s.*, the Royal Alexandra Hospital for Sick Children £140 as against £90, and the Women's Hospital £119 10*s.* as against £77, the remaining charities benefiting proportionately.

MEDICAL MAGISTRATE.—The Lord Chancellor has added the name of Mr. Lewis Mackenzie, F.R.C.S. Eng., L.R.C.P. Lond., of Tiverton, on the commission of the peace for the county of Devon.

WORKMEN'S DWELLINGS AT BRISTOL.—The Bristol Town Council has decided to erect 2000 working men's dwellings after the war.

PRESENTATION TO A MEDICAL MAN.—At the meeting of the patients and staff to celebrate the third anniversary of the opening of the V.A. hospital at Newton Abbot, Mr. Richard Henry Grimbly, medical officer in charge, was presented with a silver salver, suitably inscribed, as a mark of respect and gratitude from the nursing and kitchen staff.

BOMBAY WAR AND RELIEF FUND.—The Women's Branch of the Bombay Presidency War and Relief Fund, of which Lady Willingdon is president, gives a satisfactory account of its third year's work. During 1916 donations and subscriptions amounted to more than £23,000, while nearly £58,000 were expended on comforts and materials, and, independently of this, large quantities of gifts in kind were distributed among troops. The administration charges amounted to only 4·5 per cent. Government House was made available for war hospital nurses needing rest, and Mr. Byramjee Jeejeebhoy gave a bungalow at Bandra Point for a similar purpose. From the commencement of the work of the Women's Branch of the Fund the income from all sources has amounted to £129,071, most of which has been disbursed. An appeal for further support will shortly be issued. The beneficent work of the Fund should cause this appeal to meet with an immediate and satisfactory acknowledgment from the central offices of the Fund at Mayo Road, Fort, Bombay.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

THE National Health Insurance Bill has been passed by one of the Standing Committees of the House of Commons. It was expected that its report stage would be taken early this week, but the arrangements as to business prevented that. During its progress through Committee a number of amendments were made. The provisions of the clause respecting the removal of medical practitioners from panels have been extended, so that chemists may also be disqualified from supplying drugs in certain cases. The first subsection of the clause as amended reads as follows:—

> Where the Insurance Commissioners in pursuance of their powers under Section 15 of the principal Act remove the name of any medical practitioner or of any person, firm, or body corporate undertaking the supply of drugs, medicines, and appliances from any list of medical practitioners prepared under the said section, or from any list of such persons, firms, and bodies corporate as the case may be, they may, if they think fit so to do, remove his or their name from all or any of the other lists so prepared in which it is at the time included, and until such time as the Commissioners direct to the contrary that practitioner or person, firm, or body corporate shall be disqualified for inclusion in any other list, whether in England, Scotland, or Wales, in which his or their name was not then so included, or from which it was then removed.

The following provision respecting the travelling expenses of members of medical committees appears in Clause 41:—

> Any travelling expenses incurred by members of any local committee elected under Subsection (1) of Section 33 of the National Insurance Act, 1913, or of any committee elected by medical practitioners under Section 32 of the said Act in attending meetings of the committee or of any subcommittee thereof, and any expenses incurred by any such members on account of subsistence whilst so attending shall be deemed to be administrative expenses of the committee within the meaning of Subsection (2) of the said Section 33.

Milk for Children and Invalids.

It is explained by Mr. CLYNES, the Parliamentary Secretary to the Ministry of Food, that the Food Controller is aware of the increasing scarcity of milk, but he has no information that in any town invalids and children are finding it impossible to obtain milk. A circular is being issued to Food Control Committees, drawing their attention to their existing powers with regard to giving priority in milk supplies to children and invalids.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 5TH.

Dispensers in Military Hospitals.

Replying to Mr. HOHLER, Mr. MACPHERSON (Under Secretary for War) said: All dispensers employed in military hospitals are required to be qualified under the conditions prescribed in the Standing Orders for the Royal Army Medical Corps. Female dispensers are employed whenever possible and there is no information of any unqualified male dispensers being employed.

THURSDAY, DEC. 6TH.

Midwives (Ireland) Bill.

Answering Mr. MCKEAN, who asked what were the intentions of the Government with respect to the Midwives (Ireland) Bill, Mr. DUKE (Chief Secretary for Ireland) wrote: The second reading of the Bill has been blocked by Irish Members, and there is little hope of the Bill[1] making any substantial progress unless it can be regarded as non-controversial. I am aware of objections that have been raised to some of the provisions of the Bill, but these objections are based on matters of detail which can properly be dealt with in Committee, and I should be ready to consider any amendments that may be proposed in order to remove them.

National Insurance Grants.

Mr. DUNCAN MILLAR asked the Chancellor of the Exchequer whether, having regard to the health requirements of the nation, he was now prepared to sanction the payment of the grant-in-aid for administration and medical benefits, the grant-in-aid for sanatorium benefit, the grants to provide for the expenses of medical referee consultants and of specialist consultants in connexion with medical benefit and the equipment, &c., of clinics, and also the nursing grant, all of which grants had been suspended since the outbreak of war although appearing in the Estimates for National Health Insurance.—Mr. BONAR LAW answered: The suggestion made in the question will be carefully considered in connexion with the estimates of the National Health Insurance Department for the coming year, but having regard to the general financial situation I cannot pledge myself to the revival of all or any of those grants at the present time.

York Practitioners and Treatment of Invalid Soldiers.

Mr. BUTCHER asked the representative of the National Insurance Commissioners whether he was aware that every one of the medical practitioners on the York panel now resident in the area, had refused to attend upon invalid seamen, marines, and soldiers under the regulations recently issued by the National Health Insurance Commissioners (England), but had offered to continue to treat them upon the old (capitation) basis of treatment pending negotiations between the Commissioners and representatives of the medical practitioners, and were at present treating them gratuitously; whether he was aware that the National Health Insurance Commission (England) had refused to allow these persons to be treated upon the capitation basis provided for in the agreements between the Insurance Committee and the practitioners; and what provision was at present made by the National Health Insurance Commission (England) or the York Insurance Committee for adequate medical attention to these insured persons.—Sir E. CORNWALLIS answered: In reply to the first two parts of the question I would refer my honourable friend to the answer to a question on the same subject given on Nov. 26th. On the last part of the question I may say that I am not aware that any insured persons are not receiving adequate medical attendance in the area in question, nor is there any reason why that attendance need be given gratuitously, for the Insurance Committee will pay any bills which are sent up in accordance with the authorised arrangements.

Care of the Blind in Ireland.

Mr. BRADY asked the Chief Secretary for Ireland whether he proposed to set up an advisory committee for Ireland in relation to improvements in the condition of the blind community similar to that being constituted for England and Wales; and what steps had he taken in the matter.—Mr. DUKE replied: I am in communication with the President of the Local Government Board on this subject.

Mr. BRADY: Is the right honourable gentleman aware that a resolution advocating the establishment in Ireland of such a committee was proposed recently by the Protestant Primate of Ireland and seconded by the Catholic manager of a Catholic institution for the blind?—Mr. DUKE: I can assure the honourable Member that full attention is paid to opinion in Ireland on this subject and to the great importance of the matter.

MONDAY, DEC. 10TH.

Panel Practitioners and Invalided Soldiers.

Mr. RAMSAY MACDONALD asked the representative of the National Insurance Commissioners whether he could say

[1] THE LANCET, Dec. 8th, p. 869.

the number of Leicestershire panel practitioners who had notified their respective Insurance Committees that they were not prepared to accept invalided seamen, marines, and soldiers on their lists under the terms of the new regulations.—Sir E. CORNWALL replied: The number of the doctors referred to is not known to me, but at the same time I am not aware of any medical practitioner having refused to render treatment in any such case. I may add that the doctors appear to have been under some misunderstanding in the matter, which a letter from the Commissioners, of which I am sending the honourable Member a copy, will, I hope, serve to remove.

Sir HOWELL DAVIES asked the same questions with regard to Bristol panel practitioners.—Sir E. CORNWALL replied: I am not aware of any medical practitioner in Bristol having refused to render treatment in any such case. I may add that the regulations in question are framed in accordance with the express desires of authoritative representatives of the medical practitioners concerned, and that events subsequent to their issue have shown that the regulations are in fact acceptable to the great majority of such practitioners.

Surgeon Probationers in the Navy.

Dr. MACNAMARA, Secretary of the Admiralty, speaking in regard to a vote dealing with naval personnel, said: As regards medical officers, a number are obtained by the entry of medical students as surgeon probationers of the Royal Naval Volunteer Reserve. These officers are demobilised after a certain time to enable them to complete their medical study, and on being demobilised they are asked if they are willing to re-enter as temporary surgeons when qualified. No compulsion is applied, and their refusal to re-enter does not prevent their being demobilised in the way I have indicated.

WEDNESDAY, DEC. 12TH.

Accommodation in Civil Hospitals.

Sir WM. COLLINS asked the Pensions Minister to state the terms of reference to the committee recently appointed by him to inquire into the accommodation in civil hospitals in Great Britain and the names of those composing the committee; and whether any representatives of the voluntary hospitals were included among the members of the committee.—Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) wrote in reply: The terms of reference to the committee recently appointed by me for the survey of institutional accommodation and facilities of treatment in Great Britain are as follows:—

To ascertain the accommodation in civil and other hospitals and institutions (not being Poor-law institutions) for the treatment of sick persons and the facilities available for medical and surgical treatment and care other than that given by general practitioners in Great Britain; to consider, regard being had both to the needs of disabled men discharged from naval or military service and to those of the civilian population, the extent to which, and the means by which, such accommodation and facilities should, if necessary, be increased, and to report thereon at an early date.

The members of the section of the committee which will deal with England and Wales are: Sir A. Griffith-Boscawen (chairman), the Hon. Sir A. Stanley (Red Cross), Sir A. Newsholme (Local Government Board), Dr. J. Smith Whitaker, National Insurance Commission (England), Dr. H. Meredith Richards, National Insurance Commission (Wales), Sir George Bullock and Colonel Webb, R.A.M.C. (War Office), Colonel Sir J. Collie, Sir A. Pearce Gould, and Mr. C. F. A. Hare (assistant secretary to the Ministry). I propose to appoint a separate section of the committee to deal with Scotland. I have considered the desirability of appointing a member to represent the voluntary hospitals, and various names have been suggested to me. I shall be glad to discuss the matter with the honourable Member.

VILLAGE SETTLEMENTS FOR THE CURE AND TRAINING OF DISABLED EX-SERVICE MEN.

Lord HENRY BENTINCK convened a meeting on Dec. 10th in one of the committee rooms at the House of Commons to discuss the proposals, military and civilian, made by the Village Settlements Committee.[1] He pointed out that the number of men and the varieties of disablement were attaining such vast proportions that it was felt by the committee, of which he was a member, that voluntary effort must be put forth in close coöperation with the Ministry of Pensions in order that the problem should be adequately dealt with. A large country house and estate was obtainable where a centre could be started for carrying on both treatment and training. The Ministry of Pensions was not at present in sympathy with this committee's third object—viz., village communities—but fully approved the combining of treatment and training.

Dr. R. FORTESCUE FOX said the committee had three things in view—treatment, training, and settlement. Large numbers of men needed a long period of re-education in good surroundings, and it was essential that the centres for training should not be confined to towns. The Ministry of Pensions was not at present in favour of any permanent grouping of these men, but the permanent village settlement was not immediately in view.

Sir G. BULLOCK objected that disabled men ought not to be kept together except for purposes of treatment.

Mr. WARWICK DRAPER laid great stress on the remedial value of vocational training. The committee hoped to start a metropolitan centre in a carefully chosen site. The Board of Agriculture had promised to provide the necessary training of men able and willing to do agricultural work, and it was hoped that other Government departments would offer help of a like nature. The report, now printed and circulated among those present, had been considered and drawn up with great care.

Lord HENRY BENTINCK said the committee were willing and anxious to consider the joint settlement of disabled and of other discharged men together.

Mr. WARWICK DRAPER added that such settlement as was contemplated was primarily and mainly for the disabled men. The cost of the scheme as suggested would run into at least six figures. No public appeal had as yet been made, but steps were being taken to obtain a grant from public funds available for men injured in the defence of their country. The committee hoped to influence the public, and through it to modify the views of the Ministry of Pensions.

In reply to further questions, Lord HENRY BENTINCK said they proposed to act in good faith in regard to the collection of the necessary funds; and that the importance of placing settlements near suitable industries had been recognised.

Lord SANDWICH deprecated the collecting together of large numbers of men, although some grouping was necessary in order to provide facilities for treatment. Treatment in the cases of mental cripples was often of long duration, and some alternative to stay in hospital was essential.

[1] See THE LANCET, Nov. 3rd, p. 692.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

GRAHAM, R. B., F.R.C.S. Edin., has been appointed in charge of the Craigleith Military Hospital.

HODGE, AGNES J., M.B., C.M. Glasg., D.P.H., Medical Officer of Health for the County of Surrey.

LYONS, R. H., Captain, R.A.M.C., Tuberculosis Medical Officer for Co. Tyrone.

NORRIS, A. H., M.R.C.S., L.R.C.P. Lond., D.P.H., Chairman of the Juvenile Organisations Committee.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BELFAST DISTRICT ASYLUM.—Medical Superintendent of Purdysburn Villa Colony Asylum. Salary £700 per annum.

BIRKENHEAD, BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board, &c.

BRISTOL EYE HOSPITAL.—House Surgeon, unmarried. Salary £120 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURTON-ON-TRENT INFIRMARY.—House Surgeon. Salary as arranged, with board, &c.

CHILDREN'S INFIRMARY, Cleveland-street, W.—Female Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.

DARLINGTON HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.

DEPTFORD, METROPOLITAN BOROUGH OF.—Lady Medical Officer, four afternoons a week, for Maternity and Child Welfare Work.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, London, N.—Honorary Medical Officer in Charge of Electro-Therapeutic and Massage Department.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Two House Surgeons. Salary at rate of £100 per annum, with board, &c.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary 3 guineas per week and war bonus, with board, &c.

KINGSTON-UPON-HULL, CITY AND COUNTY OF.—Resident Medical Officer. Salary £400 per annum, with board, &c.

LEEDS CITY, PUBLIC HEALTH DEPARTMENT.—Female Medical Assistant. Salary £350 per annum.

LEWISHAM, METROPOLITAN BOROUGH.—Assistant Medical Officer of Health and Maternity and Child Welfare Medical Officer. Salary at rate of £500 per annum.

MANCHESTER ROYAL INFIRMARY (CENTRAL BRANCH).—Resident Surgical Officer. Salary £200 per annum.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female Surgeon for Throat and Ear Department.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Temporary Assistant Physician. Salary at rate of £12 10s. for one attendance per week.

ST. GEORGE'S HOSPITAL.—Senior Assistant and Registrar in Venereal Diseases Department. Salary at rate of £250 per annum.
SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Senior House Surgeon. Salary £300 per annum, with board, &c.
STOKE-ON-TRENT, COUNTY BOROUGH.—Female Assistant Medical Officer. Salary £350 per annum.
WALSALL AND DISTRICT HOSPITAL.—Female Senior House Surgeon. Salary £250 per annum, with board, &c.
WEST HAM UNION INFIRMARY, Whipp's Cross-road, Leytonstone, E.—Temporary Assistant Medical Officer. Salary £300 per annum.
WILLESDEN URBAN DISTRICT COUNCIL, HEALTH DEPARTMENT.—Temporary Assistant Medical Officer. Salary 10 guineas per week.
THE Chief Inspector of Factories, Home Office, S.W., gives notices of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Kenilworth, Warwick; Killeshandra, Cavan; Wolsingham, Durham; and at Yarmouth, Isle of Wight.

Births, Marriages, and Deaths.

BIRTHS.

HEWLETT.—On Dec. 4th, at "Sunnycroft," Crawley Down, to Professor and Mrs. R. Tanner Hewlett—a son.
MICKLEM.—On Dec. 9th, at Northridge, Boxmoor, the wife of Thomas Esmond Micklem, M.B., Lieutenant, R.A.M.C., of a son.
SEQUEIRA.—On Dec. 5th, at Charlton-terrace, Plymouth, the wife of Fleet-Surgeon W. S. H. Sequeira, R.N., of a daughter.
SMYTHE.—On the 7th Dec., at 28, St. George's-terrace, Trowbridge, Wilts, the wife of Captain Gerald Smythe, M.B., B.C. Camb., R.A.M.C., of a daughter.
SOLOMONS.—On Dec. 9th, at Fitzwilliam-square, Dublin, the wife of Bethel Solomons, M.D., F.R.C.P.I., of a son.

MARRIAGES.

COOK—REID.—On Dec. 4th, at St. Edmund's Church, Mansfield Woodhouse, Frank Cook, Captain, R.A.M.C. (S.R.), to Sister Edith H. W. Reid, youngest daughter of the late Rev. James Reid, of Co. Cork, Ireland.
GARRATT—TROTMAN.—On Dec. 5th, at the Catholic Cathedral, Brentwood, Essex, Captain Frank Garratt, R.A.M.C., to Winefride Mary, younger daughter of Mr. J. W. and the late Mrs. Trotman, of "Bromsgrove," Brentwood, Essex.
MOORE—GRANT.—On Dec. 7th, at Holy Trinity Church, Broadstairs, Leslie Moore, Lieutenant, R.A.M.C., to Marion, second daughter of the late Lieutenant-Colonel Grant, of Sunbury-on-Thames, and Mrs. Grant, Thicket Lodge, Broadstairs.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

BOOKS, ETC., RECEIVED.

BALE, SONS, AND DANIELSSON, AND T. FISHER UNWIN, London.
Future of the Disabled Soldier. By C. W. Hutt, M.A., M.D., D.P.H. 6s. net.

BLACK, A. AND C., LIMITED, London.
Radiography and Radiotherapeutics. The Edinburgh Medical Series. By Robert Knox, M.D. Edin., M.R.C.S. Eng., L.R.C.P. Lond. Second edition. 30s. net.

HEINEMANN, WILLIAM, London.
The Psychology of War. By John T. MacCurdy, M.D. 2s. 6d. net.

LAURIE, T. WERNER, London.
Originality. Popular Study of the Creative Mind. By Thomas Shornol. 15s. net.

LEWIS, H. K., London.
Proceedings of the Prehistoric Society of East Anglia for 1916-17. Vol. II., Part III. 3s. 6d. net. Postage 4d.

LIPPINCOTT, J. B, COMPANY, London and Philadelphia.
White and Martin's Genito-Urinary Surgery and Venereal Diseases. By Edward Martin, A.M., M.D., F.A.C.S.; John Rhea Barton, Professor of Surgery, University of Pennsylvania; Benjamin A. Thomas, A.M., M.D., F.A.C.S., Professor of Genito-Urinary Surgery in the Polyclinic Hospital and College for Graduates in Medicine; and Stirling W. Moorhead, M.D., F.A.C.S., Assistant Surgeon to the Howard Hospital, Philadelphia, Pennsylvania. Tenth edition. 30s. net.
The Basis of Symptoms: The Principles of Clinical Pathology. By Dr. Ludolph Krehl, Ordinary Professor and Director of the Medical Clinic in Heidelberg. Authorised Translation from the seventh German edition by A. F. Beifeld, Ph.B., M.D., Instructor in Medicine, Northwestern University Medical School, Chicago; with an Introduction by A. W. Hewlett, M.D., Professor of Internal Medicine, University of Michigan. Fourth American edition. 21s. net.

LONGMANS, GREEN, AND CO., London.
The Conduction of the Nervous Impulse. By Keith Lucas, Sc.D., F.R.S. Revised by E. D. Adrian, M.B., M.R.C.P. 5s. net.

MACMILLAN AND CO., London.
Lord Lister. By Sir Rickman J. Godlee, Bart., K.C.V.O., M.S., F.R.C.S. 18s. net.

METHUEN AND CO., London.
The Health of a Woman. By R. Murray Leslie, M.A., B.Sc., M.D. 1s. 3d. net.

OCEAN HOUSE, 3, Old Broad-street, E.C.
Links with the Past. By A. F. Shepherd.

OPEN COURT PUBLISHING COMPANY, Chicago and London.
An Ethical System Based on the Laws of Nature. By M. Deshumbert. Translated from the French by L. Giles, M.A., D.Litt., with preface by C. W. Saleeby, M.D., F.R.S. Edin. 2s. 6d. net.

STANFORD, EDWARD, London.
British Rainfall, 1916. By Hugh R. Mill and Carle Salter. Fifty-sixth annual volume. 10s.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL INVENTORS.

MEDICAL men, especially surgeons, as would be expected, have invented many new instruments and much new apparatus to assist them in their operative work. But it is not widely known that medical men have often been the originators of inventions for general or lay use. Thus Charles Brooke (1804–79), one of the first Cambridge graduates to become F.R.C.S.—twenty-third Wrangler in 1827—invented not only the "bead suture," which marked a step forward in the treatment of deep wounds, but also the exquisite self-recording instruments now in use in all important astronomical observatories. The famous James Syme, whose character Dr. John Brown summed up as "verax, capax, perspicax, sagax, efficax, tenax," may be termed the father of "the mackintosh," in that he was the inventor of waterproofing, the garment being courteously called after a famous clan in his native land, where its uses are perpetual. James Startin (1806-72), F.R.C.S., made an important commercial discovery when as a youth he was studying his profession in the laboratory of Mr. Chawner, of Atherstone, to whose firm he was apprenticed. This discovery was the process of stiffening felt hats. To Startin, therefore, we may be said to owe the useful, though ugly, bowler hat. *Papier-maché* and plaster-of-Paris are also, we believe, the inventions of medical men. But perhaps the most distinguished inventor of a surgical appliance, afterwards turned to world-wide commercial and domestic account, was William Rawlings Beaumont, F.R.C.S., M.D., of Toronto. His instrument for making deep sutures, first used in 1837 by Lawrence when operating on a cleft palate, was believed to have suggested the sewing-machine to Singer. "If it be true," said Sir James Paget, "that the sight of this instrument in the window of an instrument-maker in New York suggested the invention of the Singer sewing-machine, we might regret that mechanical ingenuity should gain so much less money in surgery than in trade."

These remarks have been prompted by a piece of information, rather in the nature of a question put to us by a correspondent in the following terms:—Thomas Michael Greenhow (1792–1881), F.R.C.S., was a man of great mechanical ingenuity and constructed various instruments and modifications of surgical appliances which his long experience at the Newcastle Infirmary suggested to him. But besides his well-known "fracture-bed" of date 1833 he made models of machines of various kinds unconnected with his surgical practice, and was busy with these lay inventions up to the close of his long life. One would like to know more about them, for they are presumably extant.

It would be interesting to know what the late T. M. Greenhow actually invented. He was a man of great ingenuity and not likely to have spent his time in futile experiment. Perhaps someone can enlighten our correspondent.

WHAT'S IN A NAME?

IN the third number of an excellent *Journal of the Department of Public Health*, issued in Wellington by Hon. G. W. Russell, Minister of Public Health, is an article on "Twilight Sleep," which the Journal states is as well known to the medical profession in New Zealand as elsewhere. The experience is given of various St. Helens hospitals, which may be summed up in a sentence: "We still use it in many cases, but not so generally as formerly. It is not without risks, especially to the infant, and is not in favour with the ordinary practitioner on that account." The conclusion drawn is that whilst, generally speaking, little or no ill-effects result to the mother from the use of the drug, yet for the sake of the baby the mother should make an endeavour to submit to some of the pains of labour under natural conditions. The popularisation of the treatment is attributed to its alluring title. Would "Twilight Sleep" have gained any popularity, the question is asked, if it had been termed "The Dope Delivery Method," or the "Half-dead Baby System"?

SURGERY IN JERUSALEM OVER 3000 YEARS AGO.

To the Editor of THE LANCET.

SIR,—The news of the capture of Jerusalem by General Allenby reminds me that in the first chapter of Judges it is stated that Judah fought against the Canaanites and the Perizites and smote of them in Bezek in Palestine 10,000 men. And they found Adoni-bezek (the Lord of Bezek) in Bezek: but he fled, and they pursued after him, and cut off his thumbs and his great toes. And Adoni-bezek said, "Three score

and ten kings, having their thumbs and their great toes cut off, gathered their meat under my table: as I have done, so God hath requited me. And they brought him to Jerusalem, and he died there." This seems to imply that although the surgical operations had been successful in the case of the 70 kings who lived to eat meat, it was unsuccessful in the case of Adoni-bezek, and that he died therefrom. I do not know if there is a term describing this operation, but I suppose it would be called "wholesale pollectomy." It was evidently a routine practice, and must have prevented a man holding a weapon or running away. I am, Sir, yours faithfully,

Dec. 11th, 1917. SALEM.

*** According to Ælian, in after ages, the Athenians, at the instigation of Cleon, son of Cleænetus, made a decree that all the inhabitants of the island of Ægina should have the thumb cut off from the right hand, so that they might ever after be disabled from holding a spear, yet might handle an oar. It was a custom among those Romans who did not like a military life to cut off their thumb that they might be incapable of serving in the army; and for the same reason parents sometimes cut off the thumbs of their children.—ED. L.

PARAFFIN IN THE TREATMENT OF WOUNDS.

As a result of extensive comparative observations, Professor Giovanni Masnata, at present in charge of the military hospital at Stradella (Pavia), concludes that paraffin of melting point 50–52° C. is as efficacious as ambrine in the treatment of wounds. His results appear in detail in *Il Policlinico*, vol. xxiv., C., 1917.

A CURIOUS ACTION OF MERCURY ON ALUMINIUM.

To the Editor of THE LANCET.

SIR,—Some years ago I also had the curious experience of witnessing this thing that Dr. Cameron Kidd relates in THE LANCET for Nov. 24th. I was working with mercury and accidentally placed an excess of the Hg in the aluminium cap of a bottle. I went on with my work and in a few minutes afterwards my attention was arrested by the peculiar behaviour of the aluminium lid: the lid was visibly sprouting a fine growth of white "worms" in a dozen different directions. One could *see* them growing outward and falling off. I demonstrated it to many people, including chemists, but I do not think any of them understood the reason why. I see your consulting chemist has confirmed these interesting observations. I have performed the experiment in the absence of breathing and moisture—i.e., in a dry heat—so the explanation must be sought in another direction. It is very interesting.

I am, Sir, yours faithfully,

M. H. FLEMING, Captain, R.A.M.C.

Biscot Camp, Luton, Beds, Dec. 3rd, 1917.

JUVENILE CRIME.

WE have received a letter, signed by Lord Lytton and other officers of the State Children's Association (53, Victoria-street, London, S.W.), lamenting the practice of sending to prison boys between the ages of 15 and 18. For these our present prison system is, they state, never reformative, and imprisonment is unnecessary in view of the alternative system of probation which the justices have employed in some London and provincial courts with admirable effect. Numbers of young persons so dealt with after a probationary term make no further appearance before the justices. The letter therefore appeals to men and women possessing sympathy with and understanding of the young to offer their services to the local benches of magistrates as voluntary probation officers for one, two, or more children. Under the influence of a steadying friendship a great number of the juvenile offenders of to-day may well become trustworthy citizens of to-morrow.

FIRE PREVENTION AT CHRISTMAS.

WITH the near approach of Christmas, and its increased dangers from fire, particularly in hospitals and other places where entertainments are given, the British Fire Prevention Committee (8, Waterloo-place, London, S.W. 1) have again issued a Christmas entertainments fire-warning sheet, No. 22A, showing what should be done to lessen the risk and to cope with an outbreak of fire if it occurs. 10,000 copies of the sheet are being exhibited throughout the country, and a single copy will be sent upon written application enclosing a stamped envelope.

Civil Medical Practitioner refers with justice to the fact that it is easier for his class to obtain unpaid than paid military work. The Central Medical War Committee welcomes the names of practitioners who are willing and able to relieve their juniors in civil practice.

Transcriber's Gloss.—The R.A.M.C. orderlies who are charged with much of the transcribing incident on medical case-taking as a rule do well, but a correspondent sends us an entry—"chronic *intestinal* nephritis"—which was at first sight puzzling

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 18th.

GENERAL MEETING OF FELLOWS, at 5 P.M.

Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Wednesday, Dec. 19th.

HISTORY OF MEDICINE (Hon. Secretaries - J. D. Rolleston, Charles Singer): at 5 P.M.

Exhibition of Pictures, Books, &c. (at 4.30 P.M.).

Papers:

Dr. G. C. Peachey: The Two John Peacheys, Seventeenth Century Physicians: their Lives and Times.

Dr. C. G. Cumston: (1) Morgagni and the Foramen Cæcum; (2) The Death of King Henry II. of France, with a rare engraving of the event.

Thursday, Dec. 20th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, H. MacCormac; Acting Hon. Secretary—S. E. Dore): at 5 P.M.

Cases will be shown.

Friday, Dec. 21st.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, Robert Knox): at 8.30 P.M.

Paper:

Mr. A. E. Baines: On the Interpretation of Certain Electro-Physiological Phenomena.

ROYAL STATISTICAL SOCIETY, at the Surveyors' Institution, 12, Great George-street, S.W. 1.

TUESDAY.—5.15 P.M., Paper:—Sir R. Henry Rew, K.C.B.: The Prospects of the World's Food Supplies after the War.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY.—4.30 P.M., Prof. J. W. Anderson: Science and the Cold Storage Industry.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W. 1.

WEDNESDAY.—8 P.M., Paper:—Prof. W. Bateson: Cytology and Genetics.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Paper:—Col. J. H. T. Walsh, I.M.S. (retired): The Geographical Distribution of Human Diseases and their Control.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

THE address of the Australian Red Cross Society is now 36, Grosvenor-place, London, S.W. 1.

MANAGER'S NOTICES.

TO SUBSCRIBERS IN THE UNITED STATES.

Messrs. Wm. Wood and Co., of New York, are relinquishing their Agency for the supply of THE LANCET in the United States at the end of the present year. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

TO SUBSCRIBERS.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on advertisement page 8.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 12th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Dec. 6	...	55	51	35	32	35	Foggy
,, 7	...	56	53	35	50	51	Overcast
,, 8	0·01	52	47	45	44	45	Raining
,, 9	0·35	49	43	40	39	41	Raining
,, 10	0·09	52	44	40	40	43	Fine
,, 11	0·04	52	43	41	38	41	Overcast
,, 12	...	42	40	35	33	35	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. E. Arnold, Lond.; Dr. H. G. Adamson, Lond.; Austin Motor Co., Birmingham; Mr. F. Aldridge, Lond.; Messrs. E. G. Allen and Son, Lond.; Anglo-American Pharmaceutical Co., Croydon; Messrs. Claudius Ash, Sons, and Co., Lond.; Anglo-French Drug Co., Lond.; Lieut.-Col. J. G. Adami, A.D.M.S.; Mr. I. Alfsen, Moss, Norway; Major Annis, R.A.M.C.; Dr. M. Atal, Lond.; Mr. R. J. Albery, Lond.

B.—Dr. J. Brown, Blackpool; Mr. P. Benham, Lond.; Messrs. W. H. Bailey and Son, Lond.; Mr. J. F. Briscoe, Southampton; Mr. G. P. Butcher, Plymouth; Messrs. Butterworth and Co., Lond.; British Fire Prevention Committee, Lond.; Burton-on-Trent Infirmary, Hon. Sec. of; Mr. J. F. Burton, Runcorn; Buxton Urban District Council, (Publicity Department): Messrs. C. Barker and Sons, Lond.; Miss S. N. Brown, Dunmow; Dr. C. A. Bucklin, Glasgow; British Drug Houses, Lond.; Dr. W. Bruce, Dingwall; Board of Agriculture and Fisheries, Lond.; Dr. J. Blomfield, Lond.; Surg.-Gen. Sir David Bruce, C.B.; British Red Cross Society, County of London Branch, Sec. of; Bristol-Myers Co., New York; Capt. C. A. Barager, C.A.M.C.; Messrs. Burroughs Wellcome and Co., Lond.; Messrs. John Bale, Sons, and Danielsson, Lond.; Bristol Eye Hospital, Sec. of; Messrs. W. Brown and Son, Huddersfield.

C.—Mr. W. Clifford, Lond.; Messrs. Currruthers and Sons, Inverness; Messrs. E. Cook and Co., Lond.; Canadian War Contingent Association, Lond., Sec. of; Messrs. G. W. Carnrick Co., New York; Messrs. T. Christy and Co., Lond.; Dr. W. M. Cro'ton, Dublin; Mr. J. Cabburn, Lond.; Mr. W. Cowdery, Lond.

D.—Lieut. G. D. Dawson, R.A.M.C.; Dr. G. B. Dixon, Birmingham; Dr. Grace H. G. Dundas, Leith; Messrs. W. Dawson and Sons, Lond.; Messrs. Down Bros., Lond.; David Lewis Colony, Warford, Sec. of; *Dental Record*, Lond., Publisher of.

E.—Lieut.-Col. R. H. Elliot; Messrs. Elliott and Sons, Lond.; Dr. W. Ettles, Lond.; Edinburgh University Union. Treas. of.

F.—Dr. V. M. Fisher, Sutton; Fiji, Chief Medical Officer of; Messrs. Fannin and Co., Dublin; Dr. A. C. D. Firth, Eastbourne; Capt. W. K. Fry, R.A.M.C.; F. W.; F. L. D.; Mr. J. S. Ferris, Ealing; Ferrocarril de Antioquia, Medellin.

G.—Dr. H. C. Gillies, Manchester; Mr. H. Green, Lond; Messrs. W. Gaymer and Son, Attleborough; Surg. H. H. Gellert, R.N.; Dr. A. S. Gubb, Mustapha Supérieur; Major H. D. Gillies, R.A.M.C.; Capt. G. C. Gray, R.A.M.C.(T.); Capt. R. Glyn, R.A.M.C.; Dr. A. W. Green, Lond.; Dr. W. Gordon, Exeter.

H.—Mr. E. M. Harvey, Lond.; Mr. J. H. Hollyer, Droitwich; Messrs. C. J. Hewlett and Sons, Lond.; Capt. C. R. R. Huxtable, R.A.M.C.; Mr. E. Hindle; Major T. G. M. Hine, R.A.M.C.; Mr. F. Hargreaves, Manchester; Hoffmann-La Roche Chemical Works, Lond.; Hospital for Sick Children, Lond., Acting Sec. of; Dr. T. J. Hudson, Leeds; Major F. T. G. Hobday, A.V.C.; Dr. H. L. Hamilton, Southampton; Dr. V. S. Hodson, M.V.O., Khartoum; Mr. J. T. Henderson, Pietermaritzburg; Mr. C. H. Hudson, Barrow-in-Furness; Hull Corporation, Medical Officer of Health of.

I.—Incorporated Society of Trained Masseuses, Lond., Organising Sec. of.

J.—Lieut. H. B. Jones, R.A.M.C.; Capt. W. H. Johnston, R.A.M.C.; Dr. J. P. Johnson, Johannesburg.

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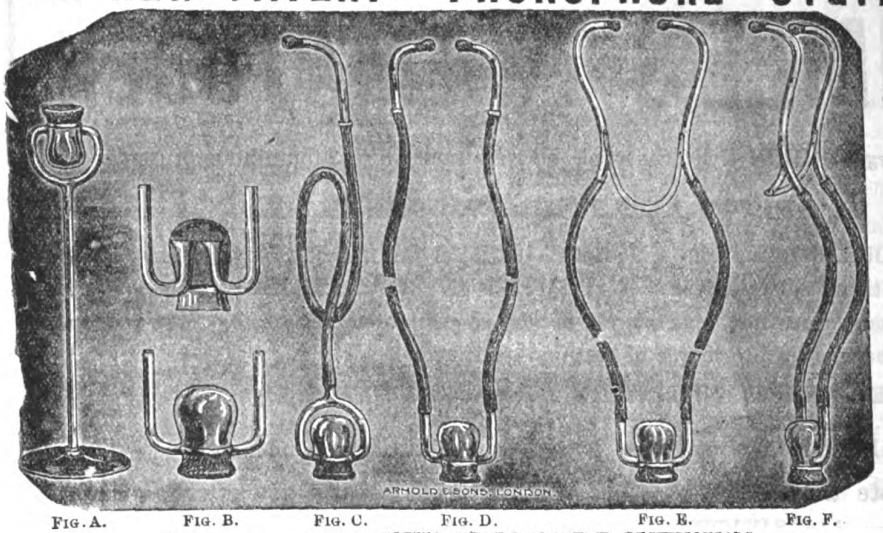


FIG. A. FIG. B. FIG. C. FIG. D. FIG. E. FIG. F.

The New Patent "Phonophore" Stethoscope (Fig. A.) 10/6

Ditto Chest piece (Fig. B.) 7/6

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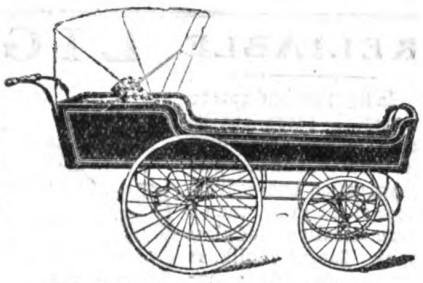
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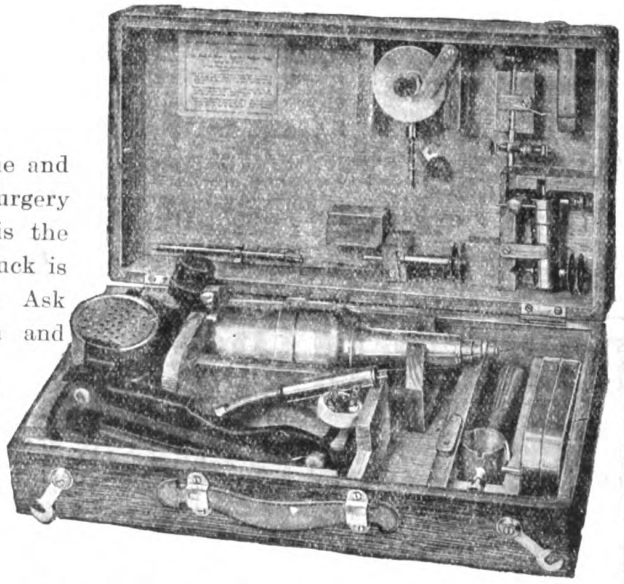
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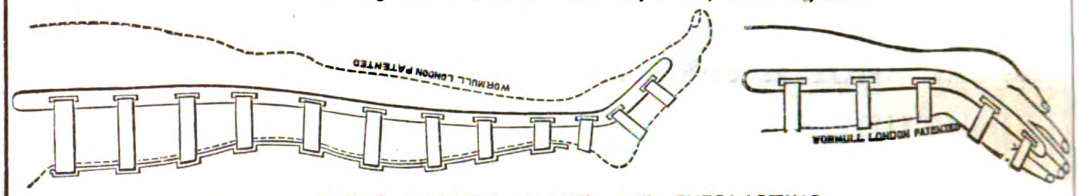


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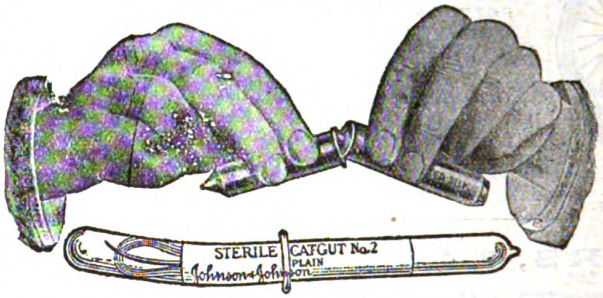
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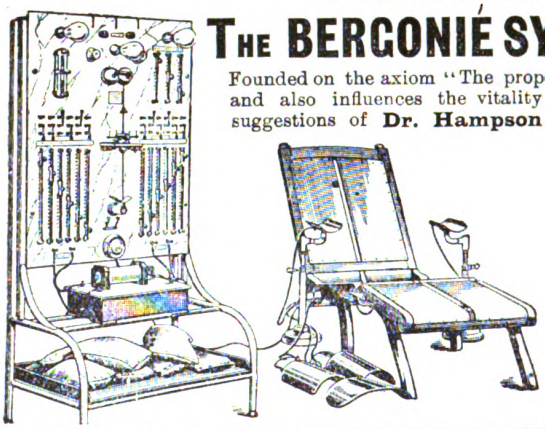


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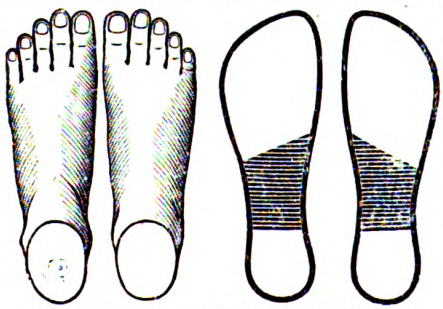
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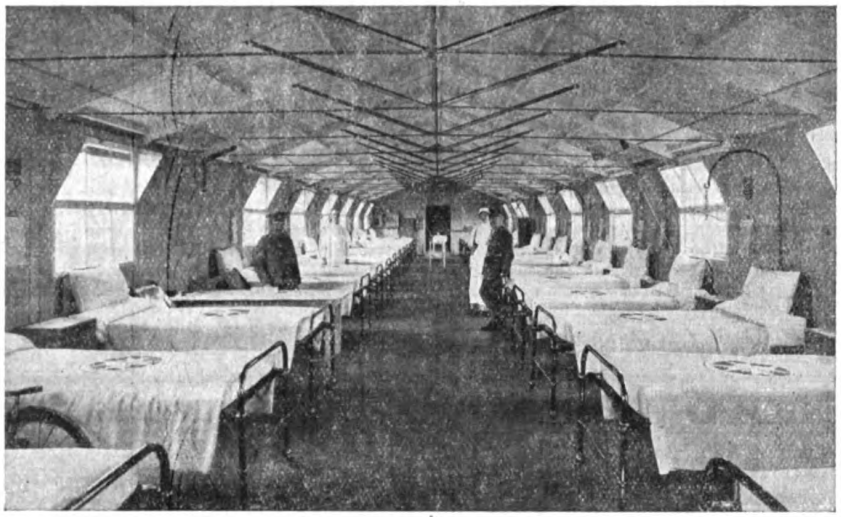
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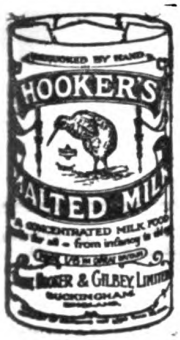
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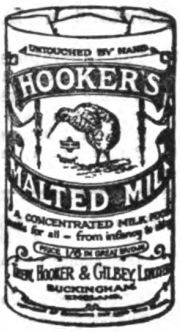
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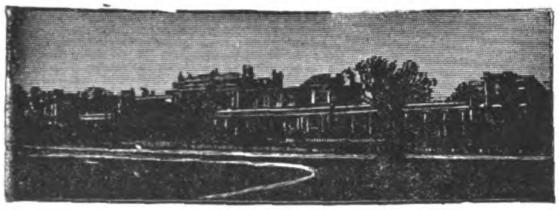
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An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.
Telephone: 16 Rickmansworth.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients. The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.
PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

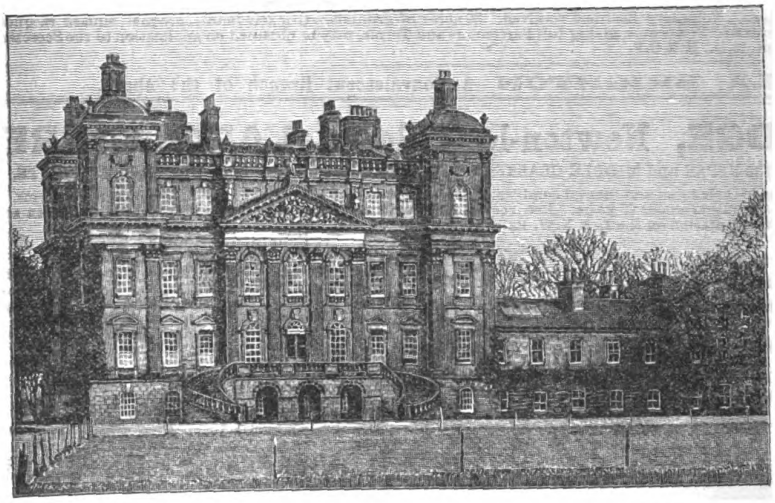
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This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales



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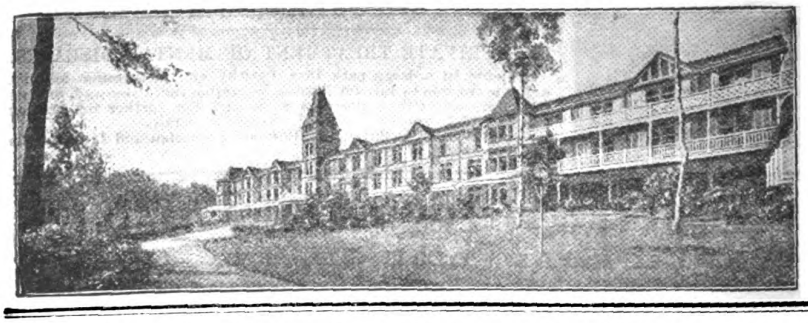
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

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MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

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TUBERCULIN USED ONLY FOR SUITABLE CASES.

WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; —— ——

For particulars, apply C. H. BERRY, M.R.C.S., Sanatorium, Chagford, Devonshire. Telephone: 11 Chagford

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"Battle Creek System."

Telephone: 88. Resident Physician:
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SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat, D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

New Hospital for Women, Euston-road.—Wanted, fully qualified Medical Woman as SURGEON in Charge of Throat and Ear Department. To attend Monday or Thur day morning (to be arranged) at 9.30. Operations first Tuesday in the month at 9.40 A.M. Applications, with copies of three testimonials, to be sent to the Secretary immediately.

IMOGEN H. MURPHY, Secretary.

Willesden Urban District Council.—HEALTH DEPARTMENT.—Wanted, a Temporary ASSISTANT MEDICAL OFFICER (Male or Female). Salary 10 guineas per week.

Forms of application may be had from the undersigned, to whom they should be returned not later than Monday, 24 h December, 1917.

GEORGE F. BUCHAN, Medical Officer.

Municipal Offices, Dyne-road, Kilburn, N.W., 7th December, 1917.

South Devon and East Cornwall HOSPITAL, Plymouth (189 beds).—The Committee invite applications for the appointment of a qualified HOUSE PHYSICIAN, Male (ineligible for Military Service) or Female, no age limit, to commence duties as soon as possible Salary £200, with board, residence, and washing. Candidates should send copies of not more than three testimonials to the undersigned.

Plymouth, 3rd December, 1917. P. J. LANGDON, Secretary.

Royal South Hants and Southampton HOSPITAL.—Required, a SENIOR HOUSE SURGEON. Must be doubly qualified, Male (ineligible) or Female. Salary £300 per annum, with rooms, board, and laundry. As arrangements are in progress for treatment of Venereal Diseases the salary may be increased by £100 per annum.

Applications, stating age, with printed copies of testimonials (five only), to be sent to me by the 27th inst.

4th December, 1917. T. A. FISHER HALL, Secretary.

The Queen's Hospital for Children, Hackney road, Bethnal Green, E. 2.—Temporary ASSISTANT PHYSICIAN required for attendance on Monday afternoons, 1.45.

Lunch provided.

Honorarium at the rate of £12 10s. for the one attendance per week, to cover travelling expenses.

Applications from Men or Women, stating qualifications and experience, should be sent as soon as possible to

T. GLENTON-KERR, Secretary.

3rd December, 1917. Telephone: Dalston 305.

Walsall and District Hospital.—The Committee invite applications from ladies for the position of SENIOR HOUSE SURGEON. Salary £250 per annum, with board, residence, and laundry. Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, at once to the undersigned. The Hospital has special departments for the treatment of diseases of the Ear, Nose, Throat, and Eye, and for the practice of Radiology.

4th December, 1917. WALTER FRANCOMBE, Secretary.

City of Leeds.—Public Health Department.—WOMAN MEDICAL ASSISTANT. — Applications are invited from qualified Medical Women for the post of Medical Assistant, chiefly for Infant Welfare work, but also to assist occasionally at the Tuberculosis Dispensary. The salary will be £350 per annum.

Intending applicants should, in the first place, communicate with the Medical Officer of Health, 12, Market Buildings, Leeds, for further details of the duties and a form of application.

Applications, with copies of three recent testimonials, and endorsed "Medical Assistant," must be sent to the undersigned not later than Monday, December 24th, 1917.

Leeds, Dec. 10th, 1917. ROBERT E. FOX, Town Clerk.

Great Northern Central Hospital, Holloway, London, N.—Applications are invited for the appointment of HONORARY MEDICAL OFFICER in charge of the Electro-Therapeutic and Massage Department.

Candidates must possess the degree of M.D. or M.B. and be a Fellow or Member of the Royal College of Physicians of London, Edinburgh, or Ireland. The appointment is open to qualified men or women.

Further particulars may be obtained from the undersigned, to whom applications, accompanied by copies of at least three testimonials, should be sent on or before the 24th inst.

GILBERT G. PANTER, Secretary.

City and County of Kingston-upon-HULL.—The Corporation require the services of a RESIDENT MEDICAL OFFICER (Male or Female) to take charge of their Infectious Diseases Hospitals. Male candidates must be ineligible for Military Service.

Salary £400 per annum, with board, residence, and washing. Applicants should state their age and previous experience.

Applications must be accompanied by copies of three testimonials of recent date, and be endorsed "Application, Resident Medical Officer," and delivered to the undersigned at the Guildhall. Hull, on or before Friday, the 28th December. H. A. LEAROYD, Town Clerk.

Guildhall, Hull, 11th December, 1917.

County Borough of Stoke-on-Trent.—ASSISTANT LADY MEDICAL OFFICER.—Applications are invited for the position of Assistant Lady Medical Officer in connexion with the Maternity and Child Welfare Work, &c., in the Borough.

Salary £350 per annum. Particulars as to the duties and the conditions of the appointment may be obtained on application to the Medical Officer of Health, St. Peter's Chambers, Glebe-street, Stoke-on-Trent. Applications, endorsed "Assistant Lady Medical Officer," and accompanied by copies of two recent testimonials, to be delivered to me not later than 12 noon on Saturday, 22nd December, 1917.

E. B. SHARPLEY, Town Clerk.

Town Hall, Stoke-on-Trent, 30th November, 1917.

Northern Infirmary, Inverness.—Wanted, a HOUSE SURGEON, Male or Female, for the Northern Infirmary, Inverness, including Phthisis Wards and Convalescent Home. To a registered Medical Practitioner with experience in the administration of Anæsthetics a salary of 2 guineas a week and 1 guinea additional as war bonus will be paid, with board, &c. The duties of the office include the dispensing of medicines for the in-door patients.

Applications, accompanied by testimonials (copies only), to be lodged with Mr. DUNCAN SHAW, W.S., Inverness, Hon. Secretary to the Institution.

16, High-street, Inverness, 12th December, 1917.

West Ham Union.—The Guardians invite applications for the appointment of a Temporary ASSISTANT MEDICAL OFFICER at their Infirmary, Whipp's Cross-road, Leytonstone, E. 11, at a salary of £300 per annum, with the usual residential allowances.

Candidates must possess qualifications both in Medicine and Surgery, and preference will be given to candidates having experience in X-Ray work.

Intending applicants should communicate, in the first instance, with the Medical Superintendent, who will furnish full particulars as to the duties, &c.

The successful candidate will be required, should occasion arise, to act in any other Institution under the control of the Board.

Applications must be made at once, on forms which can be obtained from the Acting Clerk to the Guardians, Board Room, Union-road, Leytonstone, E. 11.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. E. BUDGETT, Secretary & House Governor.

19th February, 1917.

The Hospital for Sick Children, Great Ormond-street, London, W.C.1.—TWO HOUSE SURGEONS are required:—One on 23rd January, 1918; one on 1st March, 1918

Candidates, Male or Female, are invited to send in their applications, addressed to the Secretary, as soon as possible, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible hospital appointment.

The appointment is made for a minimum period of six months. Salary at the rate of £100 per annum, washing allowance £5 per annum, and board and residence in the Hospital.

Candidates must possess a legal qualification to practise, and be ineligible for Military Service.

Candidates may be required to attend before a Meeting of the Joint Committees.

Forms of application can be obtained from the Secretary.

By order of the Committee of Management.

JAMES MCKAY, Acting Secretary.

Burton-on-Trent Infirmary.—HOUSE †SURGEON.—The Committee are prepared to receive applications from properly qualified persons for the position of House Surgeon. Furnished rooms, board, coal, and light free. Duties to commence at once.

Applications, stating age, experience, and essential particulars, and accompanied by copies of testimonials, must be sent to the Secretary, Mr. JOHN WOOD, The Infirmary, Burton-on-Trent, not later than December 20th, 1917.

York County Hospital (230 beds, including 110 for Soldiers).—Wanted, a LADY SUPERINTENDENT of NURSES. Candidates must be fully trained, certificated nurses, and must have had practical experience in institutional housekeeping. Salary £100 to £120, according to qualifications, with board, residence, &c. Applications, stating age, together with copies of not more than three recent testimonials, to be sent to the undersigned on or before the 28th instant.

11th Dec., 1917. FREDK. NEDEN, Secretary & Manager.

St. George's Hospital, S.W. 1.—SENIOR ASSISTANT and REGISTRAR (Male) required in Venereal Diseases Department, to commence work on January 2nd, 1918. Salary at the rate of £250 per annum. Attendance required three afternoons and three evenings a week. Appointment in the first instance for six months.

Applications, with copies of testimonials, should be sent to the undersigned on or before Monday, December 24th, 1917.

December 12th, 1917. JAMES M. CHURCHFIELD, Secretary.

Metropolitan Borough of Deptford.—Part-time LADY MEDICAL OFFICER.—The services of a Lady Medical Officer are required by the Deptford Borough Council on four afternoons in the week, in connexion with the Maternity and Child Welfare work.

Applications, stating qualifications, and all essential particulars, should be addressed to the undersigned so as to be received not later than Saturday, the 29th December, 1917.

ARTHUR PURKIS, Town Clerk.

Town Hall, New Cross-road, S.E. 14, December, 1917.

Manchester Royal Infirmary.—The Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointment:—

RESIDENT SURGICAL OFFICER, Central Branch, £200.

Applicants must be above the medical military age of forty-five years or medically unfit for service.

They must be registered and hold a Medical and Surgical qualification.

The appointment is subject to the provisions of the by-laws as to notice of resignation.

Applications, stating age and qualifications, should be sent to the undersigned by the 24th December, 1917. By order.

FRANK G. HAZELL, General Superintendent and Secretary.

7th December, 1917.

Belfast District Asylum. — The Committee of Management invite applications for the position of MEDICAL SUPERINTENDENT of Purdysburn Villa Colony Asylum. Candidates must be registered Medical Practitioners of not less than seven years' standing, and shall have served for not less than five years as a Medical Officer in an Asylum for the treatment of the Insane.

The officer appointed shall devote his whole time to the duties of the office.

The salary will be £700 per annum, with allowances valued (for pensionable purposes) at £150 per annum.

With the Committee's approval, the holder of the office is authorised by Privy Council Order to give Lectures on Insanity to matriculated students of Queen's University, Belfast. Fees, approximately, £200 per annum.

The appointment is pensionable under the "Asylum Officers' Superannuation Act, 1909," and is subject to the concurrence of the Lord Lieutenant.

Applications, stating age, &c., with copy testimonials, to be sent in not later than 12 o'clock noon on 28th inst., addressed "The Chairman of Committee, District Asylum, Belfast."

Belfast, 3rd December, 1917.

Metropolitan Borough of Lewisham. ASSISTANT MEDICAL OFFICER OF HEALTH and MATERNITY and CHILD WELFARE MEDICAL OFFICER.—The Lewisham Borough Council invite applications from duly qualified Medical persons for the position of Assistant Medical Officer of Health and Medical Officer for their Municipal Maternity and Child Welfare Centre.

The salary will be at the rate of £500 per annum.

The person appointed will be required to give whole time to the duties of the office, and will be under the administrative control and supervision of the Medical Officer of Health. He or she will be required to live within the Borough.

The appointment primarily will be made for one year, subject to three months' notice on either side, and, on satisfactory performance of the duties, it will be made permanent; the appointment is subject to the approval of the Local Government Board.

Preference will be given to candidates (a) having special experience in Maternity and Child Welfare work, and (b) those holding, in addition to other qualifications, a Diploma in Public Health.

Applications for the appointment, stating age, qualification and experience, and accompanied by copies of not more than three recent testimonials, should be addressed to the undersigned, and should be received by him not later than Tuesday, the 1st January, 1918.

Forms of application and further particulars will be forwarded on application.

Canvassing, personally or otherwise, will be a disqualification.

EDWARD H. OXENHAM, Town Clerk.

Lewisham Town Hall, Catford, S.E. 6, 4th December, 1917.

The Borough Hospital, Birkenhead.—Wanted, JUNIOR HOUSE SURGEON. Must be fully qualified. Duties include Casualties and Anæsthetics. Salary £170 per annum, with board and laundry. Applications to be sent to the Secretary at the Hospital.

Darlington Hospital.—Wanted, fully qualified HOUSE SURGEON, to commence duty January next. Salary £200 per annum, with residence, board, laundry, &c.

Candidates (either sex) are requested to forward copies of recent testimonials, together with qualifications and experience, to the Secretary, A. F. CREEK, 16, Greenbank-crescent, Darlington.

Bristol Eye Hospital. — House SURGEON wanted for 1st January, 1918.

Candidates must be single and duly qualified.

Salary £120 per annum, with board, residence, and washing.

Applications, stating age, qualifications, and previous experience, with copies of recent testimonials, to be sent to the undersigned.

F. W. BABER, Secretary.

Assistant Medical Officer (Female) required at the CHILDREN'S INFIRMARY, Clevelan[illegible] W. (under the Metropolitan Asylums Board). Salary at the rate of £[illegible] per annum, with board, lodging, and washing. Forms of application may be obtained from the Clerk to the Metropolitan Asylums Board, Embankment, E.C. 4, by whom applications must be received not later than 10 A.M. on 31st December.

11th December, 1917.

Special Hospital for Officers under LORD KNUTSFORD'S COMMITTEE.—There is a vacancy in the post of MATRON. Applicants must have had full mental training and institution experience. For particulars as to salary, duties, &c., apply, The Secretary, Special Hospital for Officers, 44, [illegible] Bond-street, W.

Applications, stating age, qualifications, &c., accompanied by copies of two recent testimonials, must be sent in by December 20th.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

Locums, well recommended, may still be obtained by Messrs. LEE & MARTIN, Ltd., 35, [illegible] road, Handsworth, Birmingham. Telegrams: "Locum, Birmingham."

Locum Tenens Provided at ONE Hour's Notice.

APPLY

ARNOLD & SONS

(J. E. ARNOLD, B. R. ARNOLD),

Surgical Instrument Manufacturers,

TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C. 1.

Telegrams: "Instruments, London." Telephone: 62[illegible]

Locum Tenens. — A thoroughly reliable and experienced Practitioner can take charge of a Practice for period of war. Southern Counties preferred. Mutual terms.—Address, No. 566, THE LANCET Office, 423, Strand, W.C.

Medical Man, Scotch Triple, age 46, recently disposed of Practice S. London, reliable, experienced, wishes LOCUM WORK, Management of Branch, or War Locum anywhere out of air-raid area, preferably near London. Eventual Partnership or good Nucleus within two hours London.—Address, No. 567, THE LANCET Office, 423, Strand, W.C. 2.

War Locum, Acting Partner, Institutional work.—Gentleman over Army age, active, experienced, recent satisfactory references, wishes APPOINTMENT, temporary or permanent, in or near London or Country, where car kept.—Particulars and terms to No. 568, THE LANCET Office, 423 Strand, W.C. 2.

Locum Tenens or Assistant.—Gentleman, experienced, well qualified, open to Engagement. Provincial Town or Country.—Address, No. 570, THE LANCET Office, 423 Strand, W.C. 2.

Captain, R.A.M.C. (T. F.), Coastal Section Egypt good climate, on leave at present, desires immediate EXCHANGE with M.O. on Home Service. Must be under forty-five years, and passed fit for service abroad.—Apply, M., "Springbank," Barry, Glamorgan.

Practices wanted with large Panels.—Messrs. LEE & MARTIN, Ltd., of 93, Hall-road, Handsworth, Birmingham, have many Clients on their books desiring the above.

Wanted at once, a Panel Practice of not less than 2000 in London. Cash available £250, balance payable by instalments.—Send details, in confidence, to Arnold & Sons, Transfer Dept., 6, Giltspur-street London, E.C. 1 (opposite St. Bartholomew's Hospital).

Wanted, by M.D.(Lond.), Gold Medal, F.R.C.S. (Eng.), late Surgical Specialist, R.A.M.C., Medical and Surgical Registrar, H.S., &c., good-class PRACTICE or PARTNERSHIP in a healthy place, preferably a town, with scope and early chance of a hospital appointment if possible.—Address, No. 565, THE LANCET Office, 423, Strand, W.C. 2.

£1600 for £1000.—Lancs.—A Cash and Panel PRACTICE, situated in a thickly populated industrial district. Receipts over £1600, which includes a panel value over £850 per annum. Fees 2s. 6d. upwards. Ample scope. Premium £1000, payable £600 down and the balance by instalments.—Quote Folio 721, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

Death Vacancy.—Easy Terms.—Yorkshire, £400 a year. Practically no opposition. Any reasonable offer accepted.—Apply, No. 6229, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Home County.—Small, easily-worked PRACTICE of over £300. No opposition. Near Residential locality Detached house and garden. On rail within an hour of London. Premium only £125.—Apply, No. 6230, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Medico-Legal Practice.—Exceptional opportunity for acquiring special lucrative Practice. Particularly suitable for gentleman of experience already doing this class of work.—Apply, Mr. A. V. Storey, General Manager, Scholastic, Clerical and Medical Assn., Ltd., 22, Craven-street, Strand, W.C. 2.

£1300 a year. — Residential, good-class Suburb.—A very transferable PRACTICE for disposal, with nominal Partnership introduction as long as desired. Ill-health cause of sale. Panel over 900. Visits 2s. 6d. to 7s. 6d. Good detached house and garden. Personally investigated and recommended.—Apply, 6223, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Death Vacancy. — Middlesex and Bucks.—Excellent PRACTICE in Old Town with fine Country surroundings. Receipts £1300 per annum, including Appointments and Panel. Convenient doctor's house with surgery and garage adjacent. Locum in charge.—Particulars, Mr. J. A. Reaside, The Medical Agency, Watergate House, Adelphi, W.C. 2.

Durham.—Over £1000 a year.—Very old-established PRACTICE, in small Town on rail. Very little opposition. Mining and agricultural district. Good detached house and garden. Fees from 2s. 6d. Panel 1200. Introduction six months required. Premium only £650, part by instalments.—Apply, No. 6225, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Large Midland Town.—Very old-established PRACTICE. Receipts £1262. Panel 1020. Excellent type. Rent £60. Ample accommodation. Fees 2s. to 10s. 6d. Expenses small. Premium £1100, part down and balance secured.—Arnold & Martin, Ltd., 93, Hall-road, Handsworth, Birmingham.

Death Vacancy.—Within 70 miles, in thriving Manufacturing Town of over 90,000. Income about £3000. Panel 1000, and many better-class patients. Good house and large garden; rent £50. Established twenty-four years. Locum in charge. Will be sold for first reasonable offer.—Apply, No. 6202, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

For Disposal, Practices or Partner-SHIPS.—Messrs. ARNOLD & SONS, Surgical Instrument manufacturers, have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

New South Wales.—£1700 a year.—Good increasing PRACTICE in growing Hospital Town. On line of rail. Vendor retiring. Visits in town 7s. 6d. to 10s; mileage 1s. 6d. outside. Not much Midwifery; fees from £3 3s. Good house and acre of garden. Premium £800. Photos can be seen. Interview in England arranged and all information obtained from No. 6231, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Country Practice for Sale. Good fees. Nice house and garden. Near rail. Easily worked. Premium £1000 or near offer.—Address, No. 569, THE LANCET Office, 423, Strand, W.C. 2.

To Let.—Unfurnished Ground Floor FLAT, rental of £150 per annum, very suitable for a Doctor or Dentist.—Apply, H. J. Monson, 26, Manchester-street, W. 1.

For immediate Sale, for reason of health, Doctor's detached HOUSE, every professional convenience. Leasehold, about 75 years to run. Ground rent £34 10s. Acre of garden and unique surroundings. Purchaser giving reasonable sum for same will, with as good introduction as possible, have Practice included. This year's receipts about £600.
Apply, Edgar Robins, Solicitor, Bank Chambers, Hornsey, N.

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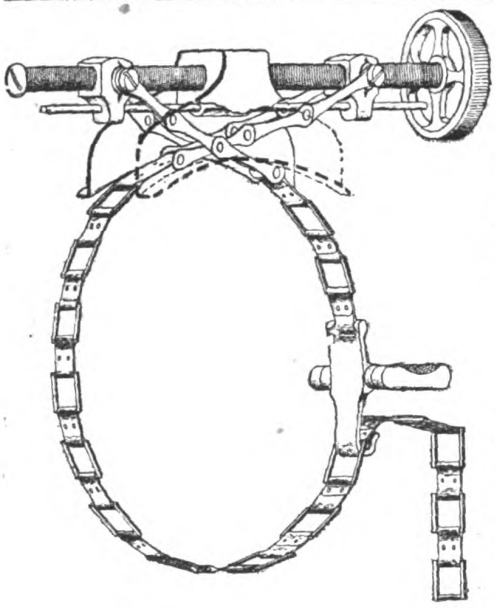
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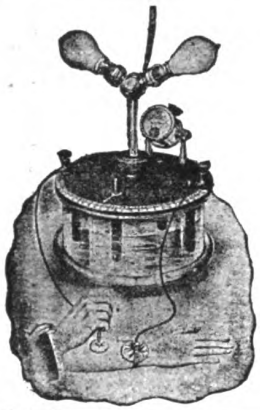
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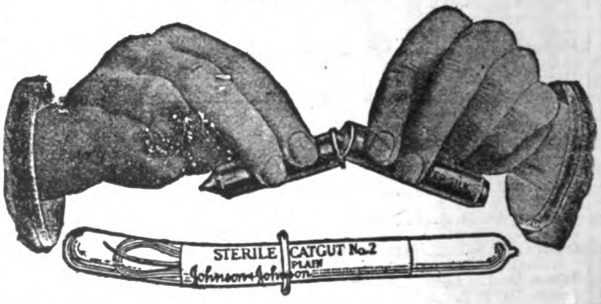
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A.—As no blood should pass back through the needle, one sterilization is enough for a hundred or more patients.
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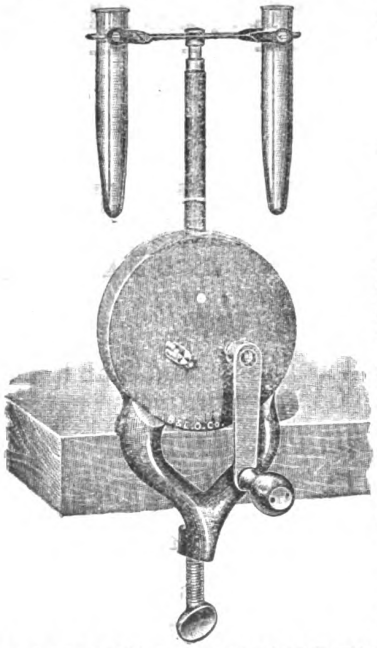
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DOUBLE-SPEED, complete with Hæmatokrit, Automatic Blood Pipette, two Sputum Tubes, in addition to two-arm Sedimentation Attachment, with one Graduated and one Ungraduated Tube,

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SINGLE-SPEED, with Sedimentation Attachment and two Tubes,

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Plus 33⅓ % war advance.

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Price **14/-** per dozen tubes.

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Write for sample, also for one of our new (sterilizable) Tongue Depressors

On sale at all Chemists and Drug Stores. Price 1/3, 2/9, and 4/6 per bottle.

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RESERVE FUND - - -		3,600,000
DEPOSITS, &c.	(October, 1917)	159,041,262
ADVANCES, &c.	do.	62,433,784

This Bank has nearly 900 Offices in England and Wales, as well as Correspondents and Agents throughout the British Islands, and a large number of Colonial and Foreign Agents. It thus offers all possible banking facilities to its customers, both at home and abroad.

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A conclusion based on trials in Hospital and in Private Practice of

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(50% Pure Liquid Paraffin.)

During the last year a large number of trials of this interesting product have been made. Many practitioners have kindly furnished us with reports as to the results. One definite conclusion arrived at by a study of these reports is that the product possesses distinct advantages in the treatment of **Constipation in Children and Infants.**

The almost general unanimity of opinion as to its success in this field of use is ascribed to the following features:

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5. The nutrient, digestive and slightly laxative qualities of the "Wander" Malt Extract being retained unimpaired add to the value of the product and make it an ideal medium in a large number of cases where dyspeptic and badly-nourished conditions are also present.
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The product has been used with advantage in many conditions where Paraffin is indicated, viz.: in **Hæmorrhoids, Stasis, After Intestinal Operations, Typhoid Convalescence, Mucous Colitis, Thread-Worm Infection and Intestinal Toxæmia.**

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Works: KING'S LANGLEY, HERTFORDSHIRE.

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Uric Acid Crystals.

3 teaspoonfuls per day, each teaspoonful in a glass of water, taken between meals. Acute conditions: 3 tablespoonfuls per day. No Contra-indication, and may be continued indefinitely without any inconvenience.



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COMMUNICATIONS:
Academy of Medicine, Paris, 10th Nov., 1908.
Academy of Sciences, Paris, 14th Dec., 1908.

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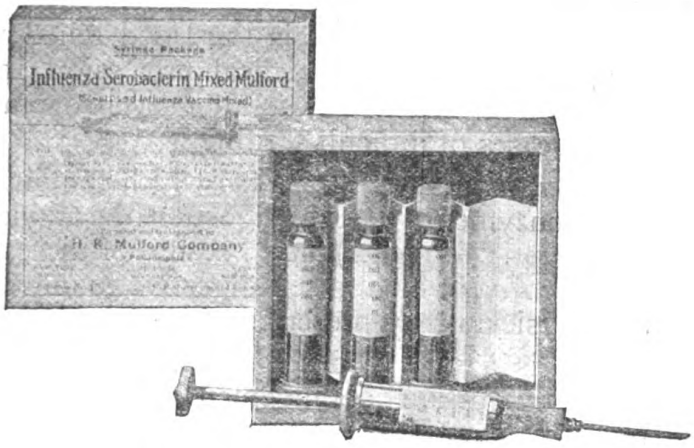
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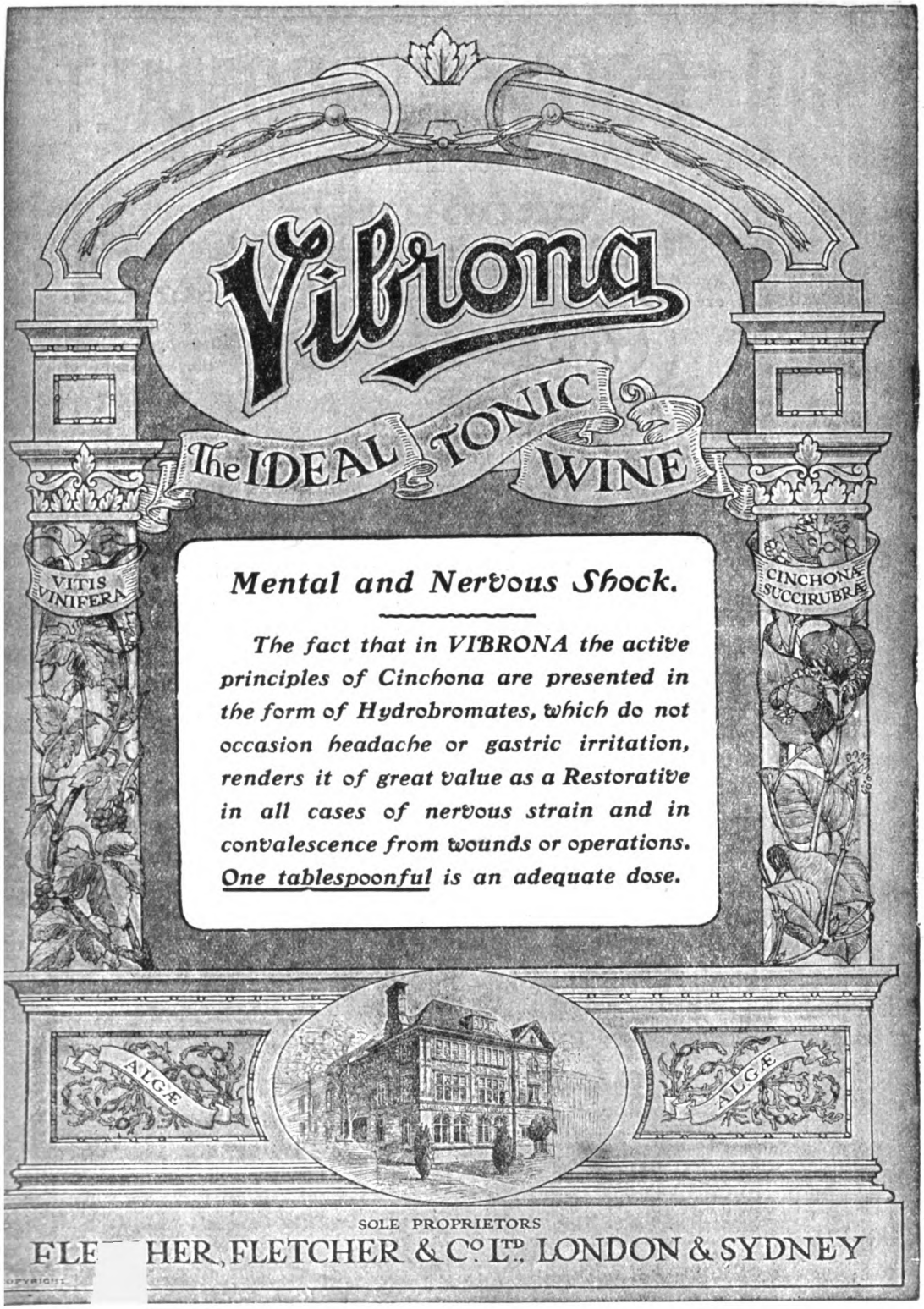
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COLLOSOL IODINE is prepared in aqueous solution, as an Oil, an Ointment, and as a Pasta.

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Cows' milk prepared with PEPTOGENIC MILK POWDER becomes remarkably like mothers' milk in all particulars: in physical properties, in colour and taste, and in the percentage of nutritive constituents: in its digestibility, its behaviour with acid, with rennet, and in the infant's stomach.

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Supplied to the Medical Profession in two sizes, at 2/4 and 4/8 each.

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retains its germicidal power so much longer than most commercial preparations do, and is of such exceptional purity, that it is recognised all over the world as

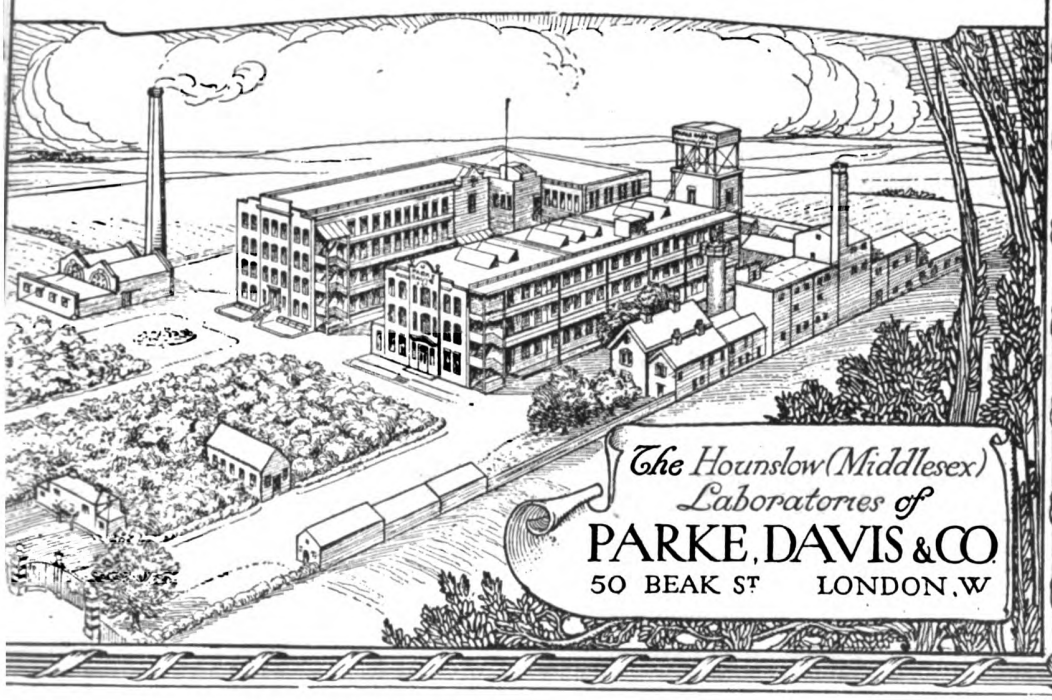
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"Byno Chrismol"

(TRADE MARKS)

marks a new departure in the treatment of Chronic Constipation, etc. It presents 50 per cent. by volume of "Chrismol," a specially selected and purified Russian mineral oil in intimate combination with the "Allenburys" Malt Extract.

"Byno Chrismol" possesses the following advantages:



It is prepared with mineral oil of the proper viscosity and chemical constitution to ensure efficient lubrication with a complete absence of bye-effects.

The intimate combination of the mineral oil and "Allenburys" Malt Extract without an emulsifying agent, ensures the maximum activity of the oil as a lubricating agent, and removes the inconvenience that sometimes follows insufficient admixture of the lubricant with the intestinal contents.

It possesses no oily taste. The "Allenburys" Malt Extract present assists digestion and assimilation.

"Byno Chrismol" is specially indicated in Chronic Constipation with symptoms of auto-intoxication, Intestinal Stasis, Mucous Colitis and in the convalescent stage of Typhoid Fever; also after Child-birth, during the nursing period and whenever a simple laxative is required by child or adult.

DOSE: A dessert-spoonful, or more, two or three times a day.

In bottles at 2/6 and 4/6 each. **Sample free on request.**

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'Bynogen'

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Recommended in all Enfeebled Conditions, Mental and Nervous Exhaustion, Insomnia, Convalescence after Illness, etc.

"Bynogen" is a highly concentrated food of acknowledged value. It is specially rich in phosphorus, which is present in the condition in which it is found in brain substance and other nervous tissues.

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Pure, Soluble Milk Protein - 75 per cent. Sodium Glycerophosphate 2 per cent.
Dextrin-Maltose (specially prepared) 20 ,, Calcium Glycerophosphate 2 ,,
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Advantages :

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Possesses a most attractive flavour and aroma, mixes readily with milk, water, and other fluids. May be eaten dry, if desired, or sprinkled on articles of solid food. Keeps good indefinitely.

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The percentage of Nitrogen is high. The Carbohydrate is in the most easily assimilable form. The mixed Glycerophosphates present the inorganic bases common in food-stuffs and do not cause constipation.

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Three strengths:—500 million, 1000 million and 2000 million organisms per c.c.

DOSAGE:—

1st. dose, 500 million; 2nd. dose, seven to ten days later 1000 million; 3rd. dose, if advisable, 2000 million.

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The FitzPatrick Lectures
ON
MEDICINE, MAGIC, AND RELIGION.

Delivered before the Royal College of Physicians of London,

BY W. H. R. RIVERS, M.D. LOND., F.R.C.P. LOND., F.R.S.,
FELLOW OF ST. JOHN'S COLLEGE, CAMBRIDGE.

LECTURE I.

MR. PRESIDENT AND FELLOWS,—In the lectures under the FitzPatrick foundation delivered before the College last year[1] I dealt with the relations between medicine, magic, and religion descriptively and from the sociological and psychological points of view. I showed that in Melanesia and New Guinea, which I chose as the region to illustrate my subject, there is an intimate connexion between three sets of social process which are clearly distinguished from one another by ourselves and other civilised peoples. I dealt briefly with some of the psychological factors underlying the union between the three kinds of process, but left altogether on one side any consideration of the mechanisms by which the relations between medicine, magic, and religion had come into being, and those by which processes so closely related in one part of the world had elsewhere become distinct and self-contained departments of social life. I have chosen this historical and evolutionary treatment for the task with which you have again honoured me.

EVOLUTION OF SOCIAL CUSTOMS AND INSTITUTIONS.

I must begin by considering briefly the general problem concerning the nature of the evolutionary process in its relation to the history of human society. The practice of medicine is a social process, subject to the same laws and to be studied by the same methods as other social processes. The chief aim of these lectures is by means of the relations between medicine, magic, and religion to illustrate the principles and methods which should guide and direct the study of the history of social institutions.

Independent Evolution.

If I had been giving these lectures only a few years ago ny mode of treatment would have been very simple. At hat time, in common with most students of human society, believed that after a dispersal widely over the earth, vhich had taken place at an epoch so distant as to place its tudy almost without the range of practical science, mankind ad evolved his customs and institutions with a high, even n some cases a complete, degree of independence. When found close similarity of custom or belief in widely eparated places I was content to ascribe it to a process of ndependent evolution, the course of which had been deter*ined* by the tendency of the human mind to respond in ertain uniform ways to the action of its physical and social nvironment. I should have been content with the position *at the* close relation of medicine to magic and religion, hich I endeavoured last year to demonstrate for Melanesia and ew Guinea, represents only one stage in a process of differtiation whereby one kind of social activity has developed sewhere into three distinct departments of social life. I ould have held that Melanesia and New Guinea have eserved for us a stage in the evolution of human society in nich this differentiation has made so little progress that it still difficult to distinguish medicine from magic and igion, while among ourselves the process of differentiation s gone so far that each of the two departments which our n society has preserved has its own specialised practiners, its own code of social regulations, and its own ly of beliefs concerning the relation of mankind to his roundings.

Moreover, when comparing the pathological ideas and the gnostic and therapeutic practices of different peoples, I uld have held any similarities which became apparent e the natural result of the unity of action of the human nd. The diseases of one part of the world are so much those of another that I should have regarded it as the st natural thing in the world that mankind should have lved similar beliefs concerning the nature of disease and similar practices by which to modify or neutralise its effects.

I should have explained the similarities between the beliefs and practices of medicine and those of magic and religion in a similar manner. I should have argued that, whether magic and religion have grown out of the beliefs and sentiments of mankind towards the mysteries of Nature or towards those of his own birth, life and death, or towards both together, these mysteries are everywhere similar in character. I should have regarded it as natural that the mind of man in its making should have reacted towards them in ways so similar as to have produced the worship of the sun and other heavenly bodies, of vegetation and of other natural forces, together with the cults of the dead which are found in so many parts of the earth. It would not have surprised me that a body of customs and beliefs embodying the reaction of mankind towards the appearances of nature or of his own life should be closely connected with those embodying his attitude towards disease. If then, as now, I had given a pre-eminent degree of importance to the great mystery of death as the most important motive in the development of the religion of mankind, the connexion of religion with the art designed to meet disease, the harbinger of death, would have seemed especially natural. I should have dwelt on the vast part which ideas connected with death and the life after death have taken in the religious development of mankind, and should have regarded the close connexion between medicine and religion as the natural consequence of the intimate relation between disease and death.

In this brief sketch of what I should have said if I had been giving the lectures a few years ago, there is much which I still believe to be true. That running through the history of mankind there has been in action a process of specialisation of social function stands beyond all doubt, and I should have been keeping strictly within the truth in regarding the increasing distinction of medicine from magic and religion as an example of this process of specialisation. There would also have been much truth in the supposition that disease and death are so closely connected that, even if the earth had been divided up into independent and self-contained departments, we should have expected much similarity in the reaction of different groups of mankind towards them. The fault I now find with the account I have just given is not so much that it is false, but that it is far from being the whole truth. It errs by giving a far too simple account of a process which has in reality been exceedingly complex.

Transmission as a Factor in Human Culture.

The great change which has taken place in our ideas concerning the value of such a scheme of evolution as I have sketched is due to several causes. I have time to-day only to mention one. This is that until recently far too little attention has been paid to the influences of degeneration in the history of human society. At one time the savage and barbarous cultures of mankind were universally regarded as examples of degeneration, but with the general acceptance of the doctrine of evolution degeneration was forgotten or neglected. In accordance with the general course of the progress of knowledge an idea which had till then been dominant was thrust aside, and even the many cases where degeneration in human society is obvious were ignored or held to be of little account. As one among many examples of this neglect I may mention that students were led to attach great importance to the rude means of navigation now found on many parts of the earth. The possibility that this rude condition may have been the result of degeneration was neglected. It was concluded that voyages on the sea had taken no appreciable part in the early wanderings of mankind. Since, in the absence of communication by sea, the existing connexions between the different continents are insufficient to explain the present distribution of mankind, ancient land connexions were assumed, thus putting back the dispersal of mankind to so remote a date as to leave ample scope for processes of independent development. It is only necessary to show that the art of navigation might not only degenerate but even disappear,[2] and voyages by sea again enter into our schemes of the early peopling of the earth, thus bringing transmission out of the lumber-room into which it had been cast by most students of human society.

[1] THE LANCET, 1916, i., 59, 117.

[2] W. H. R. Rivers: The Disappearance of Useful Arts. Festschrifft. Edvard Westermarck, Helsingfors, 1912, p. 109.

Once we acknowledge transmission as an important factor in the history of human culture, once we appreciate the important part taken by degeneration in this history, and many old problems can be seen in quite a new light. When we find a mode of treating disease closely related to a magical or religious practice, it becomes possible that the relation does not represent a stage in a process whereby medicine is gradually being differentiated from magic or religion, but the process may be rather one of assimilation. A therapeutic practice, devoid of any magical or religious character in its original home, may acquire this character when introduced elsewhere. The magical or religious guise thus obtained by a therapeutic practice would in such a case be due to the prominence of magic or religion in the culture of the people among whom the practice has been introduced. On the other hand, a magical or religious practice may have aspects which to a people who possess a genuine art of medicine suggest therapeutic or hygenic applications. These may lead to its becoming part of the medical art of its new home and to the complete disappearance of its magical or religious character. In each case the relation of medicine with magic or religion is due to a process of assimilation whereby an introduced practice has been endowed by the people who have adopted it with the features characteristic of their own culture.

Instead of human culture presenting us with a simple process of direct evolution we have a highly complex process of interaction between peoples and their cultures, producing blended products, in the case before us blends of medicine with magic and religion, which need new methods of inquiry and long years of patient study before the exact nature of the process, the whole instead of the partial truth, can be attained.

RELATIONS OF MEDICINE, MAGIC, AND RELIGION IN VARIOUS PARTS.

In my lectures last year I dealt with a limited area, with Melanesia and New Guinea, and even then I attempted no full survey, but was content to pick out a few salient examples to illustrate the relations of medicine with magic or religion. Before I enter on the special task of these lectures I must briefly sketch the nature of the relations between medicine, magic, and religion in other parts of the world. In this survey I shall begin with the countries adjacent to Melanesia.

Australia.

Australia is characterised by the large part taken by human agency in the beliefs concerning the production of disease. According to the prevailing views, this continent is held to be the special home of magic, and there is no doubt that the Australian attitude towards disease is closely bound up with practices resembling those to which the name of magic is usually given.

It is noteworthy, however, that the form of magic most widely spread over the earth, that known as sympathetic, rarely occurs in Australia. It is exceptional in this continent to act upon some part of a person with the idea of inflicting disease upon him. The usual process by which an Australian sorcerer inflicts disease is to point at his victim a bone from a dead person. It is believed that he is able to project some morbific influence into his victim, the process resembling one of which I gave an example from the Banks Islands last year.[3]

The use of part of a dead man in this process raises the question whether the method of the Australian sorcerer comes as definitely within the sphere of magic as is usually supposed. It is possible that this and other of his methods do not depend altogether, perhaps not at all, on a belief in non-human agency. The Australians certainly believe in the production of disease through the action of spiritual beings, such as the ghosts of the dead, and especially the ghosts of certain beings to whom tradition assigns the ancestry of the social group or the introduction of new elements of culture. Australia thus presents examples of both the chief categories of causation which are found in Melanesia, but it is a question whether the cases which on superficial observation seem clearly to belong to the category of magic may not be only the degenerate products of a former belief in the production of disease by spiritual beings, and especially by the ghosts of the dead.

In any case, the immediate agent to whom the Australians usually ascribe the occurrence of disease is a human being, and in accordance with this belief the object of the friends of a person who becomes ill is to discover and propitiate the man to whose action the disease is ascribed. The process of diagnosis is mainly or exclusively directed to discover the human agent, and the only treatment is to convince the patient that his spell has been removed. Whether disease is ascribed to human or spiritual agency, the therapeutic practice is usually based on the belief that the agent has implanted in the body of his victim some material object—a piece of bone, a crystal, or a pebble—as the vehicle of the disease. It is by the supposed extraction of such an object that the cure is effected, suction being the most frequent process by which the object is removed.

Polynesia.

While Australia lying on one side of Melanesia provides, at any rate from certain points of view, an example of the relation between medicine and magic, Polynesia lying upon the other side shows us a striking example of the intimate relation between medicine and religion. In some parts of Polynesia magic appears to be absent and with the exception of a few simple remedies, the cure of disease is sought by means of direct appeal to higher powers, and especially to those beings called *atua*, who are almost certainly derived from the ghosts of dead ancestors.

In this part of the world especial importance is attached to the process of prognosis which is carried out by men who enter into conditions of trance, in which they are believed to be possessed by the ghosts of the dead. In this condition the possessed person answers inquiries concerning the outcome of the illness and the friends of the patient are content to accept the fiat thus issued and do not seek to interfere with the result by the employment of any therapeutic measures. Among some peoples of Polynesia medicine can hardly be said to exist, so exclusively do the people reply upon divine help in their attitude towards disease. Even where definite therapeutic remedies are employed there is often evidence that these are of recent introduction. Thus, Mariner states[4] that the Tongans looked to the gods for relief from disease, using for this purpose rites of invocation and sacrifice. They had learnt from the Fijians not long before Mariner's stay in the islands the surgical procedures which form almost the only measures which can be regarded as strictly therapeutic.

In some parts of Polynesia the abstraction of blood, usually by means of incisions and scarifications, is a favourite remedy. Vapour and cold baths and massage are also employed as therapeutic measures, but little use is made of herbs or other internal remedies in most parts of Polynesia. An extensive vegetable pharmacopœia has been recorded from New Zealand, but, according to Elsdon Best,[5] the greatest living authority on the Maories, this is a recent growth. Before the coming of European influence the Maories were content to rely mainly upon spiritual agencies similar to those invoked by the inhabitants of other parts of Polynesia. Such internal remedies as were used in Tonga had been derived from Fiji.[6]

The medical practice of the Hawaiian Islands, though intimately connected with religion, contains more elements of a medical character. David Malo,[7] a native authority, says that the medical treatment of the sick was a matter that belonged to the worship of the gods. The treatment was applied by a *kahuna* or priest, but it included the administration of a number of herbs as well as the use of the vapour bath. The religious character of the treatment is shown, however, by offerings to the gods at different stages, and when the patient was a chief no medicine was ever administered without prayer.

In parts of Polynesia there is a belief in the production of disease by human agency and by the employment of procedures resembling the magic of other places, but beliefs of this kind are of little account beside the religious attitude. In some islands they appear to be completely absent, one island where this is certainly the case being the small Polynesian settlement of Tikopia, which lies upon the fringe of Melanesia.[8]

Indonesia.

The Malay Archipelago, now usually known as Indonesia, is of especial interest in relation to Melanesia, Polynesia, and Australia, because it is almost certain that the chief external influences which have reached these areas came by way of this archipelago. Indonesia is the seat of much recent contact with the Chinese, while before this many parts of it were saturated with Hindu influence. Probably as the result of the many influences to which it has been exposed the medical art of Indonesia presents more variety than that of either Melanesia or Polynesia. The occurrence of disease is ascribed to human agency as well as to the activity of evil spirits, of the ghosts of ancestors and relatives, and of beings who can definitely be regarded as gods.

One of the modes in which purely human agency is believed to produce disease is by acting upon separated parts of the body the so-called sympathetic magic, and though the evidence is not conclusive it would appear that this form of magic rests upon the belief in a divisible soul-substance similar to that held by the Kai of New Guinea.[9] In Melanesia and Australia it is sometimes difficult to be sure whether the injurious effects which follow the rites of a sorcerer do not depend upon the administration of poisons. In Indonesia this use of poisons stands beyond doubt, the most striking example being the production of a lingering intestinal complaint, often ending fatally, by the administration of powdered bamboo. Even when the morbid effects can confidently be ascribed to a poison, however, the utterance of incantations and other actions of the poisoner show that the process is not far removed from magic, and the agent himself probably fails to distinguish between measures in which he administers actual poisons and those in which the morbid effects are entirely due to the belief of the victim in the magical powers of one whom he has offended.

The belief in the production of disease by magic, however, plays a relatively small rôle in Indonesia compared with that in which disease is ascribed to the action of spiritual or divine beings. One of the most frequent beliefs is that, also widely prevalent in Melanesia, in which disease is ascribed to the abstraction of the soul or soul-substance. It is believed that the soul is sometimes devoured by the spirits who steal it, in which case a fatal issue is inevitable. In other cases the soul can be recovered by a priest, and the nature of the rites performed for this purpose shows clearly that the beliefs of this kind come definitely into the category of religion.

An important feature of the rites performed by a priest when dealing with disease in the island of Nias[10] is that he makes images of wood called *adu*, which probably represent ancestral ghosts. Many different kinds of *adu*, bearing special names, are made for different kinds of illness. Thus, one kind is made when the patient is suffering from fever, with swollen feet and a sensation of heaviness in the limbs, another when fever is accompanied by nightmares, and a third when there are also pains in head and body. The *adu* are made in different forms, an important feature being that the more serious the illness the larger is the number of kinds of wood which must be used. In a bad case, the *adu ba nbumbu*, made when all other remedies have failed, from 50 to 100 images are made of as many kinds of wood as can be obtained.

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[3] THE LANCET, 1916, i., 62.

[4] Mariner's Tonga, 1817, ii., 242.

[5] See W. H. Goldie, Trans. New Zealand Inst., xxxvii. (1904), 5.

[6] Mariner, loc. cit.

[7] Hawaiian Antiquities, Honolulu, 1903, p. 144.

[8] W. H. R. Rivers: History of Melanesian Society, Cambridge, 1914, vol. i., p. 315.

[9] THE LANCET, 1916, i., 63.

[10] J. P. K. de Zwaan: Die Heilkunde der Niasser, Haag, 1913, p. 1 et seq.

An *adu* is treated in various ways. It may be hung on a tree as an offering to the evil spirit who is believed to be producing the disease, or it may be set up before the patient or before or on the roof of his house. It may be thrown into a river, the belief in this case being that the disease has entered the *adu* and is carried away by the stream. The disease may also be transferred from the patient by touching him with a young pig which is then slaughtered and its blood smeared on the *adu*.

Various rites accompany the use of the *adu*. Offerings may be made to the beings to whom the action of the disease is ascribed, and in the case of the *adu ba mbumbu* the priest climbs on the roof of the patient's house to pray to the "sun-god." The patient may be isolated and his diet regulated, and he may be given remedies, such as fungi from the tree believed to be inhabited by the evil spirit to which the disease is ascribed.

In some cases the occurrence of disease is believed to affect a person because he or his relatives have committed an offence against the beings to whom the disease is ascribed, but so far as our information goes it appears that more often disease is believed to come about through the will of spirit or god independently of any sin on the part of the patient.

In addition to the measures which depend upon appeal to non-human and divine beings, remedies of the domestic order are frequently employed. This branch of medicine seems to have reached a higher degree of development than in Oceania, for these remedies are used by special practitioners, often women, called *dukun* in the island of Nias, who use massage and various internal remedies. Though definite information is lacking it is probable that the letting of blood by means of scarification and cupping is also the business of these practitioners.

I have dealt at some length with the medicine of Australia, Polynesia, and Indonesia because the culture of these three areas stands in a special relation to that of Melanesia. With few exceptions the people of Melanesia, Polynesia, and Indonesia, regions sometimes known collectively as Austronesia, speak languages which belong to closely related families, and have many other practices in common. We should therefore expect to find the similarity in their medical arts and in the relation of these to magic and religion which we have seen actually to exist. I must deal with the medicine of other parts of the world more briefly.

India.

Corresponding with its advanced civilisation, we find in India an extensive pharmacopœia and a surgery from which that of Europe has taken more than one lesson. The practice of rhinoplasty was borrowed from India, while the first performance of surgical operations under hypnotism was largely due to the experience of this practice gained by Esdaile in this country.

Even this relatively advanced art, however, seems to have greatly degenerated from that which belonged to Indian medicine about the fifth century A.D., the degeneration apparently being due to the gradual preponderance of an old indigenous art over one introduced and developed by an immigrant people. Even at its best times, however, the close relation of medicine with religion was shown by the special practice of the medical art by members of the priestly brahmanic caste. At the present time the frequent use of formulas when remedies are administered shows clearly how close is the alliance between medicine and religion, even among the more highly civilised sections of the Indian population.

Among the less advanced sections of the community the connexion between medicine and religion is still more definite. The folk-medicine of India at the present time is chiefly based on the belief that disease depends upon possession by a spirit, and the historians of Indian medicine speak of possession as characteristic of its earliest stage.

When disease is ascribed to possession the rational remedy is to rid the patient of that by which he is possessed, and, as we should expect, rites of exorcism are very prominent in Indian medicine and religion.

In India we also meet the idea of disease as a punishment for sin, the beings who thus inflict disease when offended including both the ghosts of ancestors and gods.

Not only is disease believed to fall upon man as a punishment for offences which he has committed in his present life, but the doctrine of transmigration has brought with it the belief that disease may occur as a punishment for offences committed in a former existence, and that they are to be remedied by the performance of religious observances.

One people of India, the Todas, whose culture is in many ways peculiar, exhibit an interesting phase in the specialisation of medicine and religion. There is a definite distinction between the priest and the doctor, together with a close similarity in the formulas of the therapeutic measures of the one and the divinatory and religious rites of the other.[11]

China and Japan.

China presents us with an example of medicine which resembles in many respects that of our own Middle Ages. The main doctrine upon which Chinese medicine rests is that disease depends on disturbance of the normal equilibrium between the blood, the humours, and the life-spirit. The chief element in the system of diagnosis is a highly elaborate examination of the pulse.

In the therapeutic side there is a very extensive pharmacopœia, one writer alone enumerating no less than 1892 remedies. Animal substances are frequently used, while the moxa, acupuncture, and massage are employed with great frequency.

The medicine of Japan is largely borrowed from China and presents many similar characteristics, but was placed on a more rational basis by a number of physicians from the sixteenth century onwards.

Africa.

In Africa as in the parts of the world already considered disease is ascribed to both human and spiritual agency, but several African peoples show a belief in the production of disease by natural causes to a greater extent than in Austronesia.

The belief in human agency usually takes the form of sympathetic magic, depending on the belief that disease can be brought upon a man by acting upon some part of him. This belief in magic is especially prominent in West Africa and is probably characteristic of the Negro rather than of the Bantu.

Several kinds of spiritual being are believed to inflict disease, but the ghosts of the dead seem to be the most important. In some places a distinction is made between the ghosts of ordinary people and those of chiefs or kings. There is also found the belief in special gods connected with disease and, as in other parts of the world, it is epidemic disease which is especially ascribed to these deities.

The most frequent way in which disease is inflicted takes the form of possession, but the belief in the causation of disease by the absence of the soul or of the life-principle occurs in West Africa.

The motives which are believed to lead ghosts or other spiritual agents to inflict disease are usually the breaking of a taboo, or the neglect to make offerings, tend graves, or perform the rites which the spirits believe to be their due. If the relatives of an orphan do not give the child the social position which belongs to it, it is believed that the ghost of the child's father may inflict disease upon them.

In cases where disease is ascribed to possession by a spirit the natural remedy is exorcism, which is effected either by direct appeal to the spirit or deity, but more frequently by means of a power believed to belong to an object prepared in certain ways, the fetich which is so characteristic of African culture that the term "fetichism" has come to be widely but loosely applied to the whole of African religion. A frequent form of fetich is the horn of an ox filled with various substances to which virtue is imparted by certain rites. Another frequent mode of treatment is to carry out rites designed to transfer the disease, or rather the spirit causing the disease, to some object, such as a tree or animal, or to another human being. In the last case the spirit of the disease is believed to pass into a model of the patient in clay which has been in contact with the patient's body. The object so animated is then put by the roadside or some other place where it will enter the body of the next passer-by.[12] This method closely resembles the form of magic in which a sorcerer inflicts disease upon an enemy, but differs from it in that the African purpose need not be malicious, but disease is brought upon the passer-by in the interest of one who is already ill.

In some cases in which the occurrence of disease follows an offence, such as adultery on the part of a woman while bearing or nursing a child, it is believed that the disease can only be cured by confession and rites of purification.[13]

An important place in African medicine is taken by amulets designed to avert disease. These often resemble the fetiches used for the treatment of disease.

Several African people seem to possess in a definite form the idea of the causation of disease by climatic or other natural conditions, in which case their remedies may be purely medical and devoid of any religious character, though the nature of the remedies usually brings them nearer to those of the Middle Ages than of our own time. This development of a genuine art of medicine has been recorded among several Bantu peoples, but seems to have reached its greatest height among the Masai,[14] who are said never to ascribe disease to the action of spirits and only rarely to human agency. We are told of only one disease, elephantiasis of the scrotum, which is regarded as a punishment for sin.

In addition to the modes of combating disease which are closely related to magic or religion, most African peoples employ remedies of a domestic kind which can be used by all, or measures employed by those who possess the necessary skill but are yet quite distinct from the priests or wizards, who carry out rites which are magical or religious as well as medical. Among the remedies of this kind are blood-letting in the form of cupping, massage, various forms of surgery, and many internal remedies.

Among the Masai the internal remedies are known to all, and it is only surgical procedures which are practised by specialised practitioners. In some parts of Africa a man may have a reputation for success in the treatment of some one form of disease. As was found to be the case in Melanesia, where there has been specialisation of medical function, it has often proceeded along lines different from, and it may be even antagonistic to, those which would promote the separation of medicine from magic and religion.

America.

This continent affords a good example of the intimate relation between medicine and religion, the combination having developed to such an extent that most of the religious rites, rites often very elaborate and prolonged, have as their main purpose the treatment of sickness.

The belief in the production of disease by human agency exists in North America, but it is less important and frequent than in many other parts of the world. When sickness is produced in this way the agent is usually one who has many other functions in addition to those connected with disease.

Sickness is more usually ascribed to the action of ghosts or spirits who act either on account of a natural malevolence or because they have been offended by some lapse on the part of the victim, especially the breaking of a food taboo or failure to follow the many observances connected with childbirth, puberty, menstruation, and coitus.

The most frequent belief concerning the mode of production of disease is to ascribe it to the introduction into the body of some noxious agent which, though apparently primarily of a spiritual kind, is often objectified or personified. A frequent object thus regarded as the immediate cause of disease is a piece of bone, and as frequently an animal, either a worm or insect, or it may be an animal as large as a bear or otter. A less frequent belief concerning the causation of disease is that which we have met elsewhere in which disease is ascribed to the absence of the soul or of one of several souls. Disease may also be assigned to natural causes, such as the action of the moon or of the winds.

As elsewhere, the chief lines of treatment of disease in America are the logical outcome of the beliefs in causation. They consist of rites of exorcism in which the disease possessing the patient is driven away by incantations, the noise of rattles and drums, and other means. In other cases the objectified disease is extracted by sucking or other forms of legerdemain. When disease is ascribed to loss of the soul it is recovered by a leech, and it is sometimes believed that, as in Indonesia and Melanesia, the soul of a leech leaves his body in order to recover the lost soul of the patient. Disease may be transferred to an

[11] W. H. R. Rivers: The Todas, London, 1906, p. 271.

[12] J. Roscoe: The Baganda, London, 1911, p. 344.

[13] J. Roscoe: Op. cit., p. 102.

[14] M. Merker: Die Masai, Berlin, 1904, p. 174.

animal or to another person. In the highly developed rites of the medicine societies of the Pueblo Indian, the Navaho and Apache, all the members of the society assist in the rites designed to restore health to a sick person, who defrays the whole cost of the ceremonial.

In addition to these lines of treatment which bring medicine into such close relations with religion, a number of measures, including plants as internal remedies, blood-letting, cauterisation, poulticing, massage, and vapour baths, are employed.

The civilised peoples who inhabited Mexico and Central America when these countries were conquered by the Spaniards practised an art of medicine which bore a general resemblance to that of other parts of America, though of a more advanced kind.

Among the Aztecs, of whose medicine the record is most complete, the occurrence of disease was usually ascribed to the gods, though sorcery was occasionally held responsible. An illness was often believed to follow some fault on the part of the patient, usually some breach of ritual. There were special gods of disease. In Mexico they not only inflicted disease, but there were special deities of healing, one such being a goddess of herbs, and another one who had discovered the curative properties of turpentine.

Corresponding with this belief in the divine origin of disease, diagnosis and prognosis often took the form of divination and the course of an illness was foretold by scrying in a mirror or in water or by the unravelling of a knot. The remedies included an extensive pharmacopœia, in which plants predominated, while bleeding, vapour baths, and massage were widely employed. Rites of exorcism were also used, while among this advanced people we meet again the form of treatment in which the leech pretends to suck from the body of his patient a pebble or other object which was held to have been implanted there by human or spiritual agency and to have been the cause of the illness.

Disease was also transferred from one person to another. A figure of dough, made in human form, was placed by the roadside so that it might enter the next passer-by, a process bearing the closest resemblance to one I have already mentioned as occurring in West Africa.

The existing rude peoples of Central America practise similar methods. One tribe of the Mosquito Indians of Nicaragua has the peculiar custom that sick persons are urged to eat as much as possible, especially of green turtle.

In many parts of South America the belief in human agency in the production of disease is especially prominent. Thus, in British Guiana every disease is regarded as the work of a sorcerer and an illness ascribed to his spells is treated by one of a class of practitioner who pretends to extract an object placed in the body of the patient by the sorcerer.[15]

The Incas of Peru had an extensive pharmacopœia and practised venesection, but we do not know that their religious rites were as closely connected with health and disease as was the case among the Aztecs and Mayas. The Mapuche of Chili[16] have two classes of priest, of which one also acted as leeches, while surgeons form still another body of specialised practitioners. Those who were at once leeches and priests are said to be concerned with spirits, to whose action it would seem that disease was attributed. The Mapuche use many herbs and employ venesection, massage, and vapour-baths.

SIMILARITY IN VIEWS ON CAUSATION AND TREATMENT OF DISEASE.

This survey, brief though it be, is sufficient to show how great a similarity exists between different regions of the earth in the general character of the beliefs concerning the causation of disease and in the measures which are used to combat its effects. As I have already said, these similarities have been held by most students of human society to be the result of uniformity in the working of the human mind in response to its environment. They are held to be examples of similarity in the course of evolution owing to similarity of the materials which the process of evolution moulds and uniformity of the agency by which this moulding is carried out. Only when the similarities occur among neighbouring peoples or among peoples who, though distant from one another, are known to have been in contact, has it been customary to explain them by the transmission of culture from one place to another. Otherwise they have been supposed to have arisen independently, and this view is still widely held. Its advocates fail to see how in early stages of his culture man can have moved about the world with sufficient freedom to produce the wide dispersal of object and custom which must have occurred if these similarities are due to transmission. I propose in these lectures to consider the rival views according to which these similarities depend upon transmission or are the result of processes of independent origin.

CONSIDERATION OF RIVAL VIEWS.

I may first point out how favourable a case for independent origin is presented by the phenomena of disease. Many of the similarities of culture which are believed to have come into being independently in different parts of the world relate to features of man's environment which are far from uniform. Thus, different parts of the earth show great differences in the apparent movements of the sun and in the course and nature of the seasons. As great variations are shown in the nature and annual changes of vegetation and in the natural features of land and sea. If the human mind is the same everywhere these differences in the physical environment should lead us to expect diversity rather than uniformity in the customs relating to them. Where we find similarities of reaction towards the sun, the seasons, vegetation, and other natural conditions in places where Nature presents herself under such widely diverse aspects, the advocate of the independent origin of these similarities is met at the outset by a serious difficulty.

This initial difficulty is not present, or is present in much less degree, where man himself is more directly concerned. The phenomena of birth and death are the same everywhere. The difficulty which here meets the believer in independent origin is to explain the great diversity which is shown by man's modes of reaction towards these occurrences of his own life.

This similarity of conditions throughout the world is also presented, though in somewhat less degree, by the phenomena of disease. With our advanced knowledge we recognise a considerable degree of diversity in the diseases of different parts of the world, but in his ruder phases of development man deals with symptoms rather than with diseases, or, more strictly speaking, does so in even greater measure than ourselves. The chief manifestations of disease, pain, fever, disturbances of the digestion, swellings, ulcerations and eruptions, are much the same everywhere and present a body of appearances showing so great a natural similarity that disease offers a most favourable opportunity for the advocates of independent origin. If they fail to show that similarities in the reaction of mankind towards disease have been the result of independent discovery and invention, it is difficult to see where they are likely to succeed.

Two Widely Differing Beliefs in Causation of Disease.

I can only to-day consider briefly two problems suggested by the material laid before you in this lecture and in the lectures of last year. These will serve to illustrate the kind of situation with which we are confronted in this subject.

The sketch I have given of the beliefs and practices of different regions of the earth in relation to disease has brought out certain differences in the distribution of the customs which bring medicine into such intimate relations with magic and religion.

The belief in the production of disease by the abstraction of the soul, of some part of the soul, or of one of several souls, appears to be limited to Indonesia, Papuo-Melanesia and America. We do not know of it in Asia, and though disease may be ascribed to absence of the soul or of the vital principle in West Africa, this belief does not appear to have given rise to the organised system of practices which we find in Indonesia and to a less extent in America.

India and Africa, on the other hand, are pre-eminently the seat of the belief in the production of disease by possession. These two beliefs, one in the production of disease by the addition of something to the body of the patient, the other in the abstraction of something from it, are more or less opposed to one another.[17] If the phenomena of disease are much the same all the world over, and if the similarities of belief and action are due to the uniformity of the human mind, how comes it that men should have been led to these very different beliefs, and why should these beliefs have different distributions?

The advocate of independent origin ought to be able to point to something in the nature of the diseases of Indonesia or in their relation to the environment which led the inhabitants of this region to attach so great an importance to the abstraction of the soul, while the peoples of India and Africa failed to make such a discovery, or, if they believed in the absence of the soul as a cause of illness, failed to make it the basis of their system of therapeutics.

Still more difficult is the task of explaining the co-existence of these widely different, if not opposed, beliefs among one people, as in North America. If, as the majority of students of American ethnography hold, the culture of this continent has been the result of a wholly independent process of development, we should hardly expect to find two such widely different modes of conceiving the essential nature of disease. The coexistence of two such concepts

[15] E. Thurnim: Among the Indians of Guiana, London, 1883, p. 329 et seq.

[16] O. Aichel: Arch. f. Geschichte d. Medizin, 1913, vi., 161.

[17] These opposed beliefs may sometimes be brought into relation with one another. Thus the Ewe-speaking peoples of West Africa believe that when the soul of a person quits his body it provides an opportunity for a wandering, homeless spirit to enter and produce disease. A. B. Ellis: The Ewe-speaking Peoples, London, 1890, p. 107.

s far more naturally explained as the result of the contact of eoples and the blending of their cultures.

This solution of the problem becomes still more natural hen we find the belief in the production of disease by the bstraction of a soul especially frequent and important on ie western side of the American continent—viz., in that art which forms one shore of an ocean on the other side of hich this belief flourishes. Very significant in this con-exion is the condition found among the Songish, whose omen are able to cure disease due to causes other than loss the soul, while a lost soul can only be recovered by one a special class of shamans.

Remedies of the "Domestic" Order.

The second problem which I choose for the purpose of ustration is suggested by certain differences which distin-ish the domestic remedies of many peoples from those nich are, or should be, applied only by persons with pecial qualifications. I showed last year[18] that the means combating disease adopted by the peoples of Melanesia d New Guinea follow naturally from their beliefs concern-g its causation. Once we know the Melanesian or Papuan eory of disease and their diagnostic and therapeutic easures are seen to be only the logical consequences of is theory. Actions which may seem meaningless or even iculous on superficial examination are only the natural tcome of the views which the people hold concerning the ture of disease. I stated, however, that there were excep-ns. It is in the remedies which may be applied by anyone d do not need the services of a specially qualified practi-ner that these exceptions are most apparent.

These remedies correspond very closely with those which ong ourselves we call "domestic," remedies used by yone in cases of slight illness or at the first onset of more ious illness before its gravity is recognised. Just as ong ourselves the doctor is only sent for when nestic remedies fail or when the illness is at once seen be serious, so do the Melanesian, Papuan, and other ly peoples only consult the sorcerer, priest, or leech when ir remedies of the domestic order fail, or when the gravity the case demands more powerful measures.

The nature of these domestic remedies is well illustrated the Kai, a people of North-Eastern New Guinea, of ose prolonged and complex ritual, based on the belief in traction of the soul or soul-substance, I gave so full an ount last year. In addition to the measures which involve activity of the sorcerer or leech, the Kai use a number of edies which seem to have no connexion with the concept oul-substance.

r wounds they use a rude kind of poultice made of the powdered s of the cycas-palm covered with its leaves, and various kinds af or bark are believed to have a healing action upon wounds.
e abstraction of blood is an almost universal remedy. Freshly ted wounds are made to bleed as freely as possible, and unless is done it is believed that the wound will never heal. It is held the bad blood flows away while the good blood remains in the . Headache is treated by cuts on the forehead, made with ters, formerly of obsidian and now of glass. In cases of nasal rh a stick is thrust into the nostrils to make them bleed, and this ment is also used in cases of illness in which the nose is not itself ed. Blood is also drawn by leeches applied to parts of the body h are the seat of pain.
pain in the chest with difficulty of breathing the people stroke hest with a kind of nettle, and this remedy is also used to get the muscular pain which follows long marches or the bearing of heavy loads. Vapour-baths, used for rheumatic pains, are produced ated stones, lying on and covered by leaves, placed in a hole in the earth. The painful part of the body is exposed to apour which rises from the leaves, or steam may be produced by ng hot stones into the coconut vessels which are used to carry . Kneading of the body is sometimes employed. A curious ly is used for deafness due to occlusion of the external auditory is. A small chafer is introduced into the passage and may remain for several days. This method of cleaning what Kevsser calls ugean stable of the Papuan ear, is believed to be highly efficacious restoration of hearing.

is lowly people of New Guinea thus use more or less forms of five modes of treatment which are found y over the earth—viz., poulticing, blood-letting, ige, vapour-baths, and counter-irritation. Moreover, practices stand apart from the system of therapeutics on the belief in the production of disease by human iritual agency which bulks so largely in the minds of eople.

would be easy to point out ways in which each one of easures found among the Kai might have been dis-ed by the process called chance or accident. The whole history of invention shows, however, that new discoveries do not arise in this way, but are the direct outcome of the physical and social conditions in which they have their birth. Even if inventions come to fruition by mere accident it would still be difficult to accept the position that these rude savages discovered independently and by chance five of the procedures of our own mediæval and modern medicine.

If we are to explain the independent origin of these Papuan practices we ought to be able to show that they arose out of the body of beliefs held by the people concerning the nature and causation of disease, and this is just what we cannot do. The Kai have a definite body of beliefs concerning the causation of disease, to which corresponds a definite system of therapeutics, but this system does not include the remedies I have just enumerated, nor does it seem possible to show that these remedies are in any way connected with the dominant beliefs concerning the causation of disease.

Origin of Above Practices.

The survey of the medicine of other parts of the world which I have given in this lecture shows that what is true of the Kai is true of nearly all the more lowly peoples of the earth. When we find such peoples practising venesection and cupping and using massage and vapour-baths, &c., these practices do not form part of the blend of religion and medicine which is the most striking characteristic of the attitude of these peoples towards disease. They are not practised by the special class of persons who combine in various degrees the functions of the priest and the leech, but they may be performed by anyone, or by persons who have acquired a special reputation for skill in these respects by practice and ability, not through the special processes of initiation which are usually necessary for the practice of the rites in which medicine and religion are so closely blended. In many cases even these forms of treatment are exercised by women who are so often rigorously excluded from participation in medico-religious rites.

Most of the peoples of the earth who use blood-letting, massage, and vapour-baths, have certainly not been led to these practices by motives arising out of the ideas and beliefs regarding disease which dominate the larger part of their behaviour in the presence of disease. If they have arisen independently in different parts of the earth they have not grown out of the magico-religious atmosphere which surrounds disease. They must rather be ascribed to some kind of reaction against this religious atmosphere, to a movement on the part of the general body of the people against a view of disease forming part of a system of beliefs which regulate behaviour, not only towards disease, but towards many other aspects of nature. The special arguments against independent origin which each of the customs suggests when examined independently are strongly reinforced by the absence of any relation to the body of beliefs which determine the attitude of the more lowly peoples of the earth towards disease.

It is, of course, open to the advocates of independent origin to say that such practices as blood-letting and vapour-baths as they exist in New Guinea are only the beginnings of a movement towards rational medicine among a people who had till then been altogether dominated by a system of sorcery or priestcraft. They may say that the rude forms in which these remedies occur are natural as the first product of trends of thought which have produced the more elaborate and finished forms of these practices among ourselves. In response to such an argument I will now make only one suggestion.

Highly as we rate our own civilisation, it did not enable us to discover for ourselves practices which, according to advocates of independent origin, must have been discovered by the Melanesian and Papuan. We acquired our practices of bleeding and counter-irritation from the Greeks or Arabs, our massage from the French or other continental people, and our vapour-baths from the Turks and Russians. The civilisation of which we are so proud did not of itself suffice to teach us these remedial arts, but we had to acquire them by contact and mixture with other peoples. If we are to accept the teachings of those who believe in the independent origin of such practices in Africa, Asia, Oceania, and America, we shall have to accept the position that the savage or barbarous peoples who inhabit these continents and islands were somehow able to discover arts which we who think ourselves so greatly their superiors were content to learn from other peoples.

[18] THE LANCET, 1916, i., 122.

ABSTRACT OF A

Lecture

ON THE

RELATION BETWEEN CHEMICAL CONSTITUTION AND PHYSIOLOGICAL ACTION.

Delivered before the Chemical Society on Dec. 6th, 1917,

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THE relation between chemical constitution and physiological action occupies a definite and important place in the study of drugs. Chemical investigation of a drug begins with the attempt to isolate the principle to which its activity is due. Then follow the determination of its constitution and the synthesis of a number of substances more or less closely related to the parent compound and comparison of their physiological action.

EXAMPLES OF EFFECT OF CHEMICAL CONSTITUTION.

The wideness of the term physiological action—covering, as it does, any action on the living organism—renders its discussion difficult. It is impossible, for instance, to compare the bactericidal action of phenol with the hypnotic effect of diethylbarbituric acid or with the anæsthetic action of cocaine. Moreover, the same superficial signs of physiological action may be due to widely different causes. Everyday examples of physiological action are not lacking. Compounds of similar constitution generally possess a characteristic group smell—for instance, the lower fatty acids—whilst each member may have a specific odour, which in this case serves to distinguish the individual members from formic to valeric acids. Sense of taste also provides an occasional means of discrimination, not only between side chains of different length—*p* ethoxyphenylcarbamide being sweet, whilst the higher alkyloxyphenylcarbamides are not—but also in certain cases between stereoisomerides, *d*-histidine, for example, tasting sweet, whilst *l*-histidine is tasteless.

Stereochemical influences often exercise profound effects, particularly on nerve-endings. Thus, *l*-hyoscyamine has about 100 times the mydriatic action of *d*-hyoscyamine, and *l*-adrenaline many times the pressor effect of the dextro-compound. Asymmetry of a nitrogen atom may also condition a difference, as in the case of the α and β methochlorides of *l*-canadine. The cause of this variation still remains in doubt. In one instance—that of β- and ϵ-cholestanol—Windaus has noted that the difference in their power of inhibiting the hæmolytic action of saponins—digitonin, for example—is accompanied by an equally great difference in their ability to combine with digitonin. The close relation of the cholestanols with cholesterol gives special importance to this observation, and it may be that in other cases also the action of stereoisomerides varies according to their ability to combine with the constituents of the nerve cells.

The influence of physical properties, such as solubility in different media, may be of importance, and Meyer and Overton have shown that for a particular series of aliphatic compounds their narcotic effect on tadpoles was proportional to the partition coefficients of their solubilities in oil and water.

An indication of the effect of chemical properties is afforded by the work of Ehrlich, who showed that whilst certain basic dyes stained the grey nerve substance their sulphonic acids did not. This difference suggested that bases, liberated in the blood stream by alkali, are extracted by the nerve substance, whilst their sulphonic acids remain in solution as alkali salts. He also adduced examples showing a change of action when certain basic drugs are converted into derivatives containing free acid groups or into quaternary salts. In the case of alkaloids it is a general rule that the introduction of a free carboxyl group profoundly modifies the physiological action. Benzoylecgonine, of which cocaine is the methyl ester, has no local anæsthetic action; whilst quitenine, obtained from quinine by oxidation of the vinyl group, is non-toxic. Formation of quaternary salts has also a considerable effect. For instance, papaverine has a strychnine-like action which is missing in its methochloride and reappears in its reduction product laudanosine.

FOUR PIECES OF EXPERIMENTAL WORK.

In the many cases in which members of a group of compounds of similar constitution resemble one another in physiological action it is of interest to observe the effect of slight chemical alterations. Four such pieces of work were outlined.

Tropeines.

The group of compounds known as tropeines are acyl derivatives of the aminoalcohol tropine. They were investigated with a view to determining the relation between the chemical constitution of the acyl group and the mydriatic effect produced by the instillation of a neutral solution equivalent in tropine content to a 1 per cent. solution of homatropine hydrobromide into the conjunctival sac of a cat. Six groups were examined, comprising tropeines of aliphatic acids, of substituted benzoic, hydratropic, phenylacetic, and phenylpropionic acids, and of acids in which the carboxyl and phenyl groups are separated by an imino-group.

Consideration of the results led to the conclusion that no sweeping generalisation could be made.

A generalisation associated with the name of Ladenburg, but repudiated by him, states that a tropeine, to have mydriatic properties, must contain (*a*) a benzene nucleus and (*b*) an alcoholic hydroxyl group in the side chain. The first is approximately correct, no aliphatic tropeine having yet been found to possess mydriatic properties in dilute solution, but the closed chain need not necessarily be that of benzene, as β-2-pyridyl-α-hydroxypropionyltropeine is active. The second postulate is incorrect, for mydriatic substances are obtained when the hydroxyl group of atropine is exchanged for chlorine, bromine, or acetoxyl, and when that of homatropine is exchanged for hydrogen, chlorine, or amino, or closed by the formation of a lactone. Quantitatively, however, the tropeines found to be more active than, or equal to, homatropine, contained an alcoholic hydroxyl.

Of the tropeines of hydroxybenzoic acids, the *o* and *m* compounds were active and the *p* and *3:4* compounds inactive. In the case of the methylmandelyltropeines the *p* compound is again less active than the *o* and *m* isomerides.

The tropeines of substituted hydratropic, phenylacetic, and phenylpropionic acids examined were all active, with the exception of atropine- and homatropine-sulphuric acids, the lactone of *o* carboxyphenylglyceryltropeine, and those with an unsaturated linking in the side chain containing the carboxyl group.

The steric structure of the acyl group influences the mydriatic properties—instance *d* and *l*-hyoscyamine—and steric structure is also of importance in the basic portion of the molecule, as the tropyl and mandelyl esters of pseudotropine have no mydriatic properties.

Aminoalkyl Esters.

Aminoalkyl esters possess the general formula $R.CO.O.(CR_1R_2)_n.NR_3R_4$, and are formed by the esterification of an *acid* with an *alcohol* containing an *amino* group. From the collated results of numerous workers the following general conclusions may be drawn as to the constitution of aminoalkyl esters having local anæsthetic properties. The *acyl-group* is generally, but not necessarily, aromatic. It is most often benzoyl, but many derivatives of aminoalcohols containing the *p*-aminobenzoyl, phenylacetyl, cinnamoyl, or *p*-amino-cinnamoyl groups are active. The *amino group* may be secondary or tertiary, and may be associated with simple or bridged ring complexes. The action may be modified by the nature of the alkyl groups replacing the hydrogen atoms of the amino group. The *alcohol* residues are very varied, may be primary, secondary, or tertiary, and may separate the acyl residue and the substituted amino group by chains of either two or three carbon atoms.

Adrenaline and the Amines.

Adrenaline, the active principle of the suprarenal gland, a substance of comparatively simple constitution—β:3:4-trihydroxyphenylethylmethylamine—$(OH)_3.C_6H_3.CH(OH).CH_2.NHMe$. Barger and Dale studied the relation between chemical constitution and sympathomimetic action in a large number of amines gradually approaching adrenaline in constitution. These comprised (*a*) aliphatic amines, the most active of which was *n*-hexylamine; (*b*) aromatic amines

ontaining an otherwise unsubstituted benzene nucleus. Of hese, the most active was β-phenylethylamine, which differs rom adrenaline in that it lacks the 3:4-dihydroxyl substituent in the benzene nucleus, the hydroxyl in the side-hain and the *N*-methyl substituent. The introduction of ither or both of the last two did not lead to more active ubstances. Finally, (*c*) they examined the effect of 1, 2, or 3 ydroxyl substituents in the benzene nucleus. Consideration of ie results obtained led them to conclude that the optimum keleton for sympathomimetic action consists of a benzene ng with a side chain of two carbon atoms, the terminal ne bearing an amino-group. Another optimum condition the presence of two phenolic hydroxyls in the 3:4 position relative to the side chain; when these are present an coholic hydroxyl still further intensifies the activity. A henolic hydroxyl in the ortho-position does not increase the ctivity.

Consideration of a number of glyoxaline derivatives gave gain an optimum side chain of two carbon atoms between ie ring system and the amino group.

Protozoacidal Drugs.

Quite recently experiments have been made on the relative xicity to infusoria of a number of cinchona derivatives, with view to their employment in the treatment of malaria. The sults, which indicated that ethylhydrocupreine was the ost active, do not admit of any certain conclusions as the relation between their chemical constitution and otozoacidal action.

Experiments have also been made on the relative toxicity the ipecacuanha alkaloids to amœbæ. They indicate that e full amœbacidal action characteristic of emetine is only hibited when the nucleus is intact.

FIFTH ANALYSIS OF

ASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS

DURING PART OF DECEMBER, 1916, ALL JANUARY AND FEBRUARY AND PART OF MARCH, 1917.

BY SIR DAVID BRUCE, C.B., F.R.S., F.R.C.P.,
SURGEON-GENERAL, ARMY MEDICAL SERVICE.

FOUR analyses of cases of tetanus treated in home spitals have been published in THE LANCET.[1] The mber of cases of tetanus dealt with in the five periods and e rate of mortality are given in Table I.

TABLE I.

Analyses.	No. of cases.	Recovered.	Died.	Mortality.
				Per cent.
-15	231	98	133	57·7
-16	195	99	96	49·2
-Oct., 1916	200	127	73	36·5
-Dec., 1916	100	69	31	31·0
-March, 1916-17 ...	100	81	19	19·0

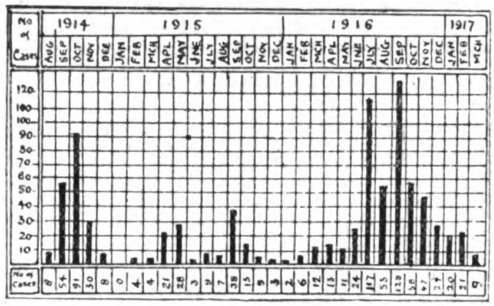
n the second analysis it was stated that "early treatment uld be striven for, and if this were done and the antitoxin lied thoroughly, one would not despair of reducing mortality to, say, 20 per cent. instead of 50 per cent., which it stands for the past year." The mortality has n reduced to 19 per cent. for the last hundred cases, whether this has been due to the specific treatment, o which of the several factors which come in, it is impose at present to say. Whatever is the cause—the prophyic dose of serum, better surgical treatment, quicker gnosis, more thorough therapeutic treatment, &c.—the ılt is gratifying. It is difficult to apportion the proper rds. For example, if surgical treatment could be made essful, if wounds could be cleaned up and rendered ile at the beginning, then there would be no more cases of nus. There is some evidence that an improvement in gical technique is discernible, but much remains to be e.

(1) THE LANCET, Oct. 23rd, 1915; (2) Dec. 2nd, 1916; (3) June 30th, ; (4) Sept. 15th, 1917.

The Distribution of Cases of Tetanus from August, 1914, to March, 1917.

Diagram 1 merely represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war. They are taken from the date of the wound, not from the date of the onset of the

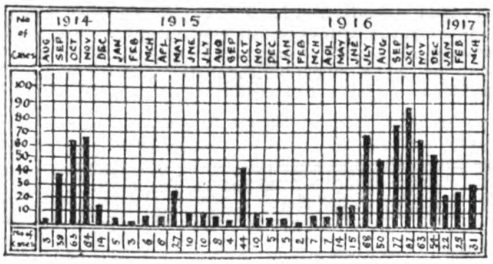
DIAGRAM 1.



disease. In August, 1914, there were eight men wounded who sooner or later developed tetanus. The figures have no relation to the number of wounded or the number of troops engaged. The diagram shows periods of activity and inactivity in the fighting line.

For example, the eight men in August, 1914, were wounded at the battle of Mons, the 54 in September at the

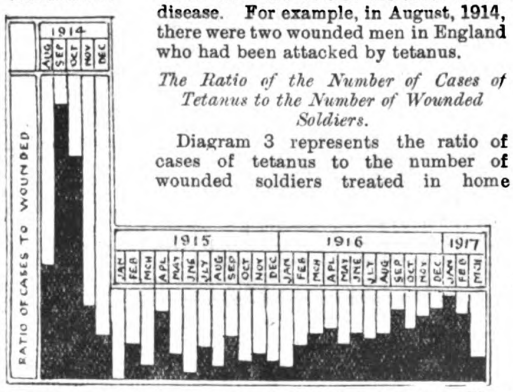
DIAGRAM 2.



battle of the Marne. The cases in October and November were due to wounds received probably at La Bassée and Ypres. The rise in September, 1915, marks the battle of Loos; in July, 1916, the battle of the Somme, and so on.

Diagram 2 represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war. They are taken from the date of the onset of the disease. For example, in August, 1914, there were two wounded men in England who had been attacked by tetanus.

DIAGRAM 3.



The Ratio of the Number of Cases of Tetanus to the Number of Wounded Soldiers.

Diagram 3 represents the ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals from August, 1914, to March, 1917. They are reckoned from date of wound, not from onset of disease. The abrupt fall in the ratio in November, 1914, is due to

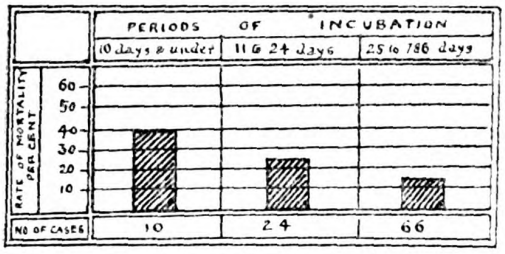
the introduction of prophylactic injections of antitoxin, which took place about the middle of October.

In regard to the proportion of wounded men who contract tetanus in home hospitals it is impossible at present to give accurate figures. The number of wounded in England has not been published. Judging from reports which have come in from various districts it may be roughly put down at 1 per 1000.

Relation of the Number of Days which Elapse between the Date of Wound and the Onset of Symptoms, and the Rate of Mortality.

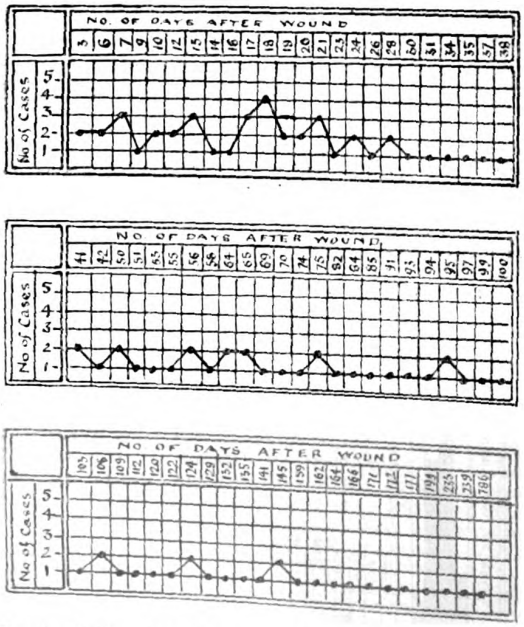
Diagram 4 shows that in the 100 cases dealt with if the symptoms of tetanus appeared within ten days of receiving

DIAGRAM 4.



the wound the mortality was 40 per cent., if from the eleventh to the twenty-fourth day 25 per cent. The remaining 66 cases, with an incubation period of from 25 to 786 days, 13·6 per cent. The incubation period of 786 days is a doubtful case. The man is reported to have had three attacks of tetanus. The last attack, 786 days after the date of wound, was probably due to a nervous hysterical condition which was mistaken for tetanus. As has been shown by Dr. Goadby, the tetanus bacilli may remain for long periods quiescent at the site of old wounds, so that 786 days would not seem to be an impossible incubation period. But in this case it must be left out of count.

CURVE A.



The Incubation Period, or Number of Days which Elapse between the Date of Wound and the Onset of Tetanus Symptoms.

Curve A shows the number of cases which occurred on each day after the date of the wound. The shortest period of incubation was 3 days, the longest 239. The case with an incubation period of 786 days must, as already explained, be ignored. There were only 10 cases with a short incubation period—that is, up to 10 days—and 69 cases with an incubation period of more than 22 days.

The Average Length of Incubation of Cases of Tetanus Treated in Home Hospitals since August, 1914.

Table II. shows that the average incubation period has been steadily lengthening since the beginning of the war. This is probably principally due to the prophylactic injection of antitoxin.

TABLE II.

Analysis.	No. of cases.	Average incubation in days.
1914–1915	231	13·4
1915-1916	195	31·2
Aug.-Oct., 1916	200	30·6
Oct.-Dec., 1916	100	45·0
Dec., 1916-March, 1917	100	67·0

The Variation in the Period of Incubation since the Beginning of the War.

Table III. gives the number, in percentages, of cases with short, medium, and long incubation periods which have occurred since the beginning of the war. From it will be seen that in the first year there were 47 per cent. of cases with a short incubation, whereas in the last analysis this has fallen to 10 per cent. In 1914–15 there were only 6·4 per cent. of cases with a long incubation period; this has risen to 69 per cent.

TABLE III.

Analys's.	Incubation periods.		
	Up to 10 days.	11 to 22 days.	More than 22 days.
	Per cent.	Per cent.	Per cent.
1914–15	47·0	46·4	6·4
1915–16	15·5	48·8	35·6
Aug.-Oct., 1916	14·0	43·8	42·1
Oct.-Dec., 1916	12·6	26·3	61·1
Dec., 1916–March, 1917 ...	10·0	21·0	69·0

This is a measure of the action of the prophylactic inoculations of antitoxin. During the first year of the war many of the wounded did not receive this, hence the number of acute cases with a short incubation.

The Proportion of Cases of Local Tetanus to General Tetanus.

On examining the 100 cases under consideration it was found that 81 could be placed in the general and 19 in the local group. In the 81 cases of generalised tetanus there were 58 recoveries and 23 deaths, a mortality of 28·3 per cent. All the cases of localised tetanus recovered. The symptom of trismus is recorded in 65 out of the 81 cases, opisthotonos in 14. Table IV. gives this in tabular form.

TABLE IV.

Cases.	Type of tetanus.	Recovered.	Died.	Rate of mortality.
81	General.	58	23	28·3 per cent.
19	Local.	19	0	0·0

The Position of the Wounds in Reference to the Mortality.

TABLE V.

Position of wounds.	No. of cases.	Recovered.	Died.	Rate of mortality.
Body	30	24	6	20·0 per cent.
Limbs	70	58	12	17·0 „

Among these were 13 cases of trench feet, 4 of whom died.

The Effect of Fractures on the Rate of Mortality in Cases of Tetanus.

In the previous or fourth analysis the percentage of wounds with fracture of one or more bones was 35, with a rate of mortality of 11·4 per cent. It has been held that the presence of a fractured bone complicating a wound was a source of danger and heightened the death-rate. From

Table VI. it would appear that there is little difference in the rate of mortality in the two classes, the slight advantage being on the side of the fractures.

TABLE VI.

Wounds.	No. of cases.	Recovered.	Died.	Rate of mortality.
Fracture	35	29		17·0 per cent.
No fracture ...	65	52	13	20·0 ,,

Tetanus occurring After Operative Interference with the Wound.

Table VII. gives the cases, 6 in all, in which tetanus is reported to have followed on an operation. There was one death, a mortality of 16·6 per cent. In none of these cases was a prophylactic inoculation of antitetanic serum given before the operation. The Tetanus Committee advise that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should invariably be given.

TABLE VII.

No. of case.	Date of wound.	Date of operation.	Date of tetanus.	Days after wound.	Days after operation.	Nature of wound.	Nature of operation.	Recovered.	Died.
	1916–17	1916–17	1916–17						
721	24/9	12/12	24/12	91	12	R. thigh.	Suture of sciatic nerve.	R	—
758	7/9	16/1	17/1	132	1	Knee and arm.	Bone removed from stump.	R	—
779	8/12	21/12	25/1	17	4	Trench feet.	Amputation of both legs.	R	—
791	5/9	23·2	24/2	172	1	Scalp, both arms, both thighs.	Removal of piece of shell.	R	—
799	21/1	1·3	9/3	41	9	Amputation of arm.	Incisions through fascia	—	D
848	2/11	2/2	4/2	94	2	Both legs, both arms.	Re-amputation.	R	—

There were no cases of operative interference with wounds after tetanus symptoms had appeared in the 100 cases under analysis.

Treatment of Tetanus by Antitetanic Serum.

A. *Prophylactic or Preventive Treatment.*

Among the 100 cases, 73 are noted as having received a prophylactic injection of antitetanic serum in France. Twenty-one cases are reported to have received secondary prophylactic injections; 8 received three injections, 4 received four injections, and 1 received five injections.

Of these 73, 60 recovered and 13 died, giving a mortality of 17·7 per cent. Of the remaining 27 cases, there is no record of prophylactic treatment in 13, although in all probability most of them received it. Of these 13 cases, 11 recovered and 2 died, a mortality of 15·3 per cent. The

TABLE VIII.

Prophylactic injection.	Rate of mortality per cent.				
	1914–15	1915–16	Aug.–Oct., 1916	Oct.–Dec., 1916	Dec., 1916–Mar., 1917
Received	51·3	42·8	27·4	16·4	17·7
Not recorded ...	41·1	52·0	44·8	40·5	15·3
None given ...	62·5	55·5	54·5	64·7	28·5

remaining 14 cases are stated to have had no prophylactic injection of any kind. Of these, 10 recovered and 4 died, a mortality of 28·5 per cent. This may be represented shortly in Table VIII., which also gives the results since the beginning of the war.

TABLE IX.

No. of cases.	Inoculated.	Recovered.	Died.	Mortality.
44	On day of wound.	36	8	18·1 per cent.
13	One day after wound.	12	1	7·7 ,,
6	Two days ,, ,,	5	1	16·6 ,,
1	Three ,, ,, ,,	1	—	—
2	Four ,, ,, ,,	1	1	—
2	More than 4 days after wound.	2	0	—

In regard to the question as to what influence, if any, promptitude in giving these prophylactic injections has in reducing mortality, Table IX. gives all the available information.

On the Results Obtained from Multiple Prophylactic Injections.—The Tetanus Committee of the War Office have laid down that four prophylactic injections should be given to every wounded soldier at intervals of seven days.

In the 100 cases under review the case mortality was 19 per cent. It will be remembered that only 73 out of the 100 cases were recorded as having received a prophylactic injection in France. Table X. represents the rate of mortality of cases of tetanus which have received one to five prophylactic injections.

TABLE X.

No. of inoculations.	No. of cases.	Recd.	Died.	Rate of mortality.
Received 1	39	30	9	23·0 per cent.
,, 2	21	16	5	23·8 ,,
,, 3	8	7	1	12·5 ,,
,,	4	3	1	25·0 ,,
,,	1	1	0	—

Table XI. represents the effect of one or more inoculations on the incubation period.

TABLE XI.

No. of inoculations.	No. of cases.	Average incubation period, in days.
1	39	77·6
2	21	54·8
3	8	62·1
4	4	142·25
5	1	94·0

B. *Therapeutic or Curative Treatment.*

The whole of the 100 cases under review were treated with antitetanic serum. 81 recovered, 19 died. Mortality 19 per cent.

On the Influence of Route in the Injection of Antitetanic Serum.—The Tetanus Committee in their Memorandum are of opinion "that in acute general tetanus the best method of treatment lies in the earliest possible administration of large doses of antitoxin by the intrathecal route."

Of the 100 cases—	Mortality per cent.
8 were treated by subcutaneous injections alone. 7 recovered, 1 died	12·5
7 were treated by intramuscular injections alone. 7 recovered, 0 died.	0·0
5 were treated by intravenous injections alone. 5 recovered, 0 died	0·0
2 were treated by intrathecal injections alone. 1 recovered, 1 died	50·0
There were 70 cases which included intrathecal injections. 53 recovered, 17 died	24·2
There were 30 cases which did not receive intrathecal injections. 28 recovered, 2 died	6·6
There were 11 cases which included intravenous injections. 10 recovered, 1 died	9·0
There were 89 cases which did not include intravenous injections. 71 recovered, 18 died	20·2

Is there any other evidence to be found in the tetanus reports that the intrathecal route has any advantage over the other methods of injection?

Treatment Beginning on Day of Onset of Disease.

	Mortality per cent.
During the period December–March, 52 cases were treated with antitetanic serum on the day the symptoms declared themselves. 41 recovered, 11 died...	21·1
Out of the 52 cases the following received antitoxin, but not intrathecally, on the day of the disease. 23 cases: 24 recovered, 4 died	14·2
Out of the 52 cases the following received antitoxin, including intrathecally, on the day of onset of the disease. 24 cases: 17 recovered, 7 died	29·1

Treatment Beginning on the Day Following the Onset of Disease.

During this period 10 cases were treated with antitetanic serum beginning one day after the symptoms had declared themselves. 7 recovered, 3 died	30·0
Out of the 10 cases the following received antitoxin, but not intrathecally, one day after the onset of the disease. 8 cases: 5 recovered, 3 died	37·5
Out of the 10 cases the following received antitoxin, including intrathecally, one day after the onset of the disease. 2 cases: 2 recovered, 0 died...	0·0

Treatment Beginning Two Days after the Onset of the Disease.

	Mortality per cent.
During this period 8 cases were treated with antitetanic serum beginning two days after the symptoms had declared themselves. 8 recovered, 0 died	0·0
Out of the 8 cases the following received antitoxin, but not intrathecally, two days after the onset of the disease. 5 cases: 5 recovered, 0 died	0·0
Out of the 8 cases the following received antitoxin, including intrathecally, two days after the onset of the disease. 3 cases: 3 recovered, 0 died	0·0

Treatment Beginning Three to Eight Days After the Onset of the Disease.

	Mortality per cent.
During the same period 30 cases were treated with antitetanic serum beginning three to eight days after the symptoms had declared themselves. 25 recovered, 5 died	16·6
Of the 30 cases the following received antitoxin, but not intrathecally, three to eight days after the onset of the disease. 11 cases: 10 recovered, 1 died	9·5
Of the 30 cases the following received antitoxin, including intrathecally, three to eight days after the onset of the disease. 19 cases: 15 recovered, 4 died	21·0

It is evident that no case either for or against the intrathecal route can be made out from these figures, and again, as in the last analysis, it would appear better to defer treatment for one or more days after the onset of the disease. This probably only means that the severe cases are treated at once; the less severe are dallied with.

The following tables show the *influence of dosage* on the curative action of antitetanic serum:—

(*a*) *The Total Quantity of Antitoxin Given during the Attack.*

Out of the 100 cases—				Recovered.	Died.	Mortality per cent.
0 received	1,000 units or under.					
5	1,001 to	5,000 units	... ...	5	0	0·0
8	5,001 ,,	10,000 ,,	... ...	5	3	37·4
4	10,001 ,,	15,000 ,,	... ...	2	2	50·0
3	15,001 ,,	20,000 ,,	... ...	3	0	0·0
23	20,001 ,,	30,000 ,,	... ...	17	6	26·0
11	30,001 ,,	40,000 ,,	... ...	11	0	0·0
17	40,001 ,,	60,000 ,,	... ...	15	2	11·6
23	60,001 ,,	100,000 ,,	... ...	17	6	26·0
6	100,001 ,,	249,000 ,,	... ...	6	0	0·0

(*b*) *The Daily Quantity of Antitoxin Given.*

Out of the 100 cases—				Recovered.	Died.	Mortality per cent.
3 received	1,000 units or under	... ...		3	0	0·0
26 ,,	1,001 to	5,000 units	... ...	22	4	15·4
33 ,,	5,001 ,,	10,000 ,,	... ...	30	3	9·0
17 ,,	10,001 ,,	15,000 ,,	... ...	14	3	17·6
7 ,,	15,001 ,,	20,000 ,,	... ...	5	2	28·5
9 ,,	20,001 ,,	30,000 ,,	... ...	5	4	44·4
4 ,,	30,001 ,,	40,000 ,,	... ...	1	3	75·0
1 ,,	40,001 ,,	52,000 ,,	... ...	1	0	0·0

From these figures relating to dosage no useful deduction can be made. They may be useful to enable a comparison to be made with the amount of serum given at different periods during the war.

Other Therapeutic Remedies.

None of the 100 cases under review was treated by carbolic acid or magnesium sulphate.

Conclusions.

1. In the 100 cases of tetanus under review the mortality was only 19 per cent.
2. The incubation period tends to become longer, due to the prophylactic injection. Hence there are only 10 cases reported with an incubation of 10 days or under.
3. Only 14 cases are reported to have received secondary prophylactic injections of antitetanic serum in home hospitals.
4. In regard to the therapeutic effect of antitoxic serum the evidence is still inconclusive.

THE LATE MR. G. A. GLOAG.—George Alexander Gloag, L.R.C.P., L.R.C.S., L.M.Irel., died at his residence at Clifton, Bristol, on Nov. 26th. The deceased qualified in 1868 and had practised for many years in Clifton and Bristol, where he was highly respected. He was formerly on the medical staff of the Bristol Dispensary.

ROYAL ALBERT HOSPITAL, DEVONPORT.—The annual meeting of the subscribers to this institution was recently held. The medical report showed that 666 in-patients had been admitted, against 557 in the previous twelve months. 2353 patients had been treated in the casualty department. The financial statement showed that the expenditure amounted to £5195, and the income was £4148. The adverse balance was £1660. A strong appeal was made for increased subscriptions, or otherwise some of the beneficial work of the charity would have to be curtailed.

A MODERN VIEW OF TETANUS.

BY FRED RANSOM, M.D. EDIN.,

MEMBER OF THE WAR OFFICE COMMITTEE ON TETANUS; READER IN PHARMACOLOGY, UNIVERSITY OF LONDON.

TETANUS is a disease of the central nervous system, and all the effects which tetanus toxin produces are due directly or indirectly to its action upon nerve cells.

Forms of Tetanus in Man and Animals.

Whether all nerve cells are equally susceptible is a point for further elucidation. At a first glance the facts would seem to indicate that certain cells are more easily affected than others. In man, for instance, the muscles of the jaws and neck are usually the first, and sometimes the only, seat of the tetanus spasm. Again, the onset of the disease varies considerably in different animals. Indeed, it is possible to divide animals, including man, into three classes, according to the form in which the disease commences. In guinea-pigs and mice the first symptoms after subcutaneous or intramuscular administration appear in muscles in the immediate neighbourhood of the point of injection, wherever that may be, so, if the toxin is injected into the left hind-leg, the symptoms of tetanus will show themselves first in that limb. This has long been known as local tetanus. In man and the horse certain muscular areas are usually first affected, irrespective of the site of injection—in man the masseters and muscles of the neck, in the horse muscles of the neck and tail. This may be called specific tetanus or tetanus descendens. In frogs and fowls the symptoms are general from the outset.

The further course of the disease depends largely upon the amount of toxin administered. If this has been considerable the local as well as the descending form will develop into more or less severe general tetanus. On the other hand, if the dose of toxin is small no such accession takes place and the attack will not pass beyond the local or specific phase.

Local tetanus does not occur after intravenous injection, but in guinea-pigs and other animals of that group after intravenous injection the neck and jaws are often first affected, and in rabbits the injection of large doses into muscle-free tissue gives rise to tetanus descendens beginning in the jaws. In a general way, in animals the incubation period is longer with small than with large doses of toxin, but no dose, however large, given subcutaneously or intramuscularly will reduce the incubation period below a certain limit which varies with different animals—e.g., for mice 8–12 hours.

Results of Experimental Work.

One of the most striking and interesting of the above facts is the occurrence of local tetanus; for here we have a toxin whose effects are due exclusively to its action on the central nervous system, and yet, in certain animals, the area in which the first symptoms appear is conditioned by the locality of the injection. Until comparatively recent times this problem remained unsolved, and in consequence the etiology of tetanus was obscure. The solution now very generally accepted is that suggested by Professor H. H. Meyer and myself, and is based entirely upon experimental work. The preliminary stages and the conclusive results of the investigation may be briefly summarised as follows.

When tetanus toxin is injected subcutaneously it begins at once to pass from the lymph spaces into the lymph vessels and can, after a few minutes, be recognised in the lymph of the thoracic duct. By this route it reaches the blood stream, not much being taken up by the blood-vessels direct from the seat of injection. The distribution then goes on till, in about 24 hours, the lymph and the blood contain per cubic centimetre about the same amount of toxin. If the toxin is given intravenously it soon begins to pass into the lymph, and again after some 24 hours the thoracic lymph and the blood serum contain per cubic centimetre nearly equal quantities of toxin. Neither after subcutaneous nor after intravenous injection can toxin be detected in the cerebro-spinal fluid, not even when very large doses of toxin far exceeding the minimal lethal dose have been given. If by means of lumbar puncture the toxin is injected into the subarachnoid space without injury to the pia or cord it passes rapidly into the blood stream, and after the usual period of incubation general tetanus ensues. If, however, the toxin is injected intravenously and immediately afterwards the spinal cord is injured by the injection

of a drop of normal salt solution, then the general tetanus is preceded by a local tetanus in the muscles corresponding to the injured segment of the cord. If the injection of toxin is made direct into the cord a local tetanus corresponding to the injured cells ensues, and the period of incubation is greatly shortened. If an animal is first protected by the administration of a large dose of antitoxin so that no free toxin can exist in the blood, and then a small dose of toxin is injected into a motor nerve, a local tetanus corresponding to the distribution of the injected nerve results. Injection of toxin into a purely sensory nerve does not cause either local or general tetanus.

From these and other facts we have drawn the conclusion that the transport of toxin to the central nervous system takes place along the motor nerves The cells of the central nervous system do not pick up the toxin from the blood or the lymph; the only route by which cells can be attacked is viâ the motor nerves. Under this condition the motor nerves of the infected area are at an advantage, and the toxin travelling along them reaches their centres before the rest of the toxin, which has first to be absorbed and distributed, has time to become effective. The consequence is that, other things being equal, the first symptoms of tetanus occur in the area supplied by the motor nerves about the point of injection—a local tetanus arises.

It was further found possible to protect certain areas by injecting antitoxin into the motor nerve. An animal was given intravenously considerably more than the minimal lethal dose of toxin. A few hours afterwards antitoxin was injected into both sciatic nerves. The animal developed tetanus in the muscles of the fore-limbs, head, neck, and trunk, but the hind-limbs remained free. The toxin when it has reached the cord wanders from segment to segment along the nerve tracts, and hence it is possible after an injection has been made into a hind-limb to protect the front part of the body by dividing the cord. For example, two animals were taken. In the one the cord was divided at the 2–3 lumbar vertebra. Each then received toxin in both sciatic nerves. As soon as local tetanus appeared both animals were given a large dose of antitoxin, neutralising all toxin in the blood and lymph. The animal with undivided cord got general tetanus; in the other the tetanus remained localised in the hind-limbs.

The sensory nerve trunks are not implicated in the transport of toxin from the seat of infection or the blood stream to the central nervous system. Nevertheless, sensory cells are susceptible if the toxin is brought into immediate contact with them. Injection into a posterior root does not cause any muscular rigidity, but there is extreme hyperæsthesia in the sensory areas corresponding to the injected root. We have called this condition *tetanus dolorosus*. These further facts indicate not only that the toxin travels in the motor nerves, but also that the transporting medium is not the lymph stream, but the protoplasma of the neurons, for otherwise the occurrence of motor tetanus without *tetanus dolorosus* seems inexplicable, but some observers believe in transport by the lymph.

Symptoms of Tetanus: Course of Events.

The characteristic symptoms of tetanus are: an increased muscular tone, resulting in more or less rigidity and stiffness and some consequent limitation of motility; increased reflex excitability; a condition of contracture, not simply increased tonus, but an absolute shortening of the muscles involved.

The progress of events seems to be: the toxin travelling along the motor nerves reaches the corresponding motor cells and sets up there a certain over-excitability, so that the usual normal reflex impulses which maintain the normal muscular tone become more effective, the tone of the muscles concerned is increased, they acquire a more or less distinct rigidity (stiffness), and freedom of movement is diminished. This is in animals the first symptom of tetanus, and with small doses of toxin nothing further may occur; there is no increased reflex, and the whole symptom may pass off in a day or two or even in a few hours.

If the dose of toxin has been somewhat larger its action extends to receptor cells in the reflex arch in immediate connexion with the affected motor cells; they become over-excitable, so that tactile excitement of the affected (tetanic) limb causes increased response in that limb, but not elsewhere. In animals a flexion reflex is thus often converted into an extension. In the jaws of man this increased reflex excitability causes the inhibitory impulse which is necessary to open the jaws to be converted into an augmentor impulse closing them. If, as happens not infrequently in human beings, the diaphragm is very early attacked (before the jaws), then respiration will be to some extent interfered with because the inhibitory relaxation of the muscle tends to be converted into a contraction (pain in the chest). For a similar reason, if the muscles of the soft palate and glottis are early affected, difficulty in deglutition may be, and, in fact, often is, a very early symptom. Often before the exaggeration of the reflexes becomes excessive there are frequent clonic contractions, twitchings, of individual muscles in the vicinity of the point of injection or the infected wound, indicating increased reflex excitability. After large doses of toxin more and more motor cells and more reflex apparatus in the cord gradually become affected; there is a general rise of muscular tone and general increase of reflexes.

Very soon after, possibly simultaneously with the occurrence of rigidity from increased tonus a certain amount of contracture may be noticed. If at this period the animal is deeply anæsthetised a great part of the rigidity disappears—i.e., is neurogenous, but the relaxation is not complete. A change has taken place in the muscles themselves; there is absolute shortening, contracture, in addition to the raised tonus. This contracture is primarily neurogenous and secondarily myogenous. It resembles the contracture of ankylosis which does not take place if the nerves are divided before the limb is fixed. It varies in degree from slight rigidity to marked contracture of whole groups of muscles—e.g., both hind-limbs. Animals mostly gradually recover, but sometimes the muscles atrophy and the condition becomes permanent.

Certain early symptoms in man are doubtless due to specific sensibility of certain central cells causing localised muscular affection. Epigastric discomfort indicates raised tonus or spasm of the diaphragm. Pain or difficulty in swallowing is associated with increased reflex excitability of the *tensor veli palatini* and *tensor tympani* muscles and the muscles of the glottis; the two former are also associated with yawning, which has occasionally been noted as an early symptom of tetanus. Twitching or painful tenseness in the vicinity of the wound is an early and very suggestive symptom of increased reflex excitability.

Effect of Prophylactic Use of Antitoxin.

The severity of an attack of tetanus depends primarily upon the amount of toxin absorbed, though the possibility of predisposition cannot be denied. Other things being equal, the occurrence of purely local tetanus in man would indicate that the amount of toxin circulating in the blood is small and not sufficient to affect even the specifically susceptible centres for the masseters, &c., though enough has been taken up locally by the motor nerves near the infected area to cause local tetanus. On the other hand, if trismus occurs as an early symptom, or if the diaphragm is affected, the prognosis is not so favourable because it indicates a larger dose of toxin.

However, all this is profoundly modified by the prophylactic use of antitoxin. Previous to the use of antitoxic serum local tetanus as an early stage of the disease in man was, at any rate, seldom observed; since the serum has been used generally as a prophylactic many cases of local tetanus have been recorded. The prophylactic application has tended to remove man from the class of animals predisposed to descending tetanus to that in which local tetanus prevails. This may be interpreted to mean that the prophylactically injected serum, by completely or to a considerable extent neutralising any toxin which may reach the lymph or the blood, protects the specifically susceptible cells for the masseters, &c. It does not necessarily prevent the occurrence of local tetanus, because some of the toxin formed at the point of infection is rapidly taken up by the motor nerves in the vicinity and can then be effective. It has been shown experimentally that the previous injection of even large doses of antitoxin does not prevent the outbreak of local tetanus, though it can, and does, hinder the development of general tetanus.

It is highly probable that under present conditions the occurrence of trismus as a first or early symptom in man is an indication of insufficient or ineffective use of antitoxin as a prophylactic.

Therapeutic Use of Antitoxin.

With reference to the therapeutic use of antitoxin, it must be remembered that the toxin in nerves and nerve cells is inaccessible to antitoxin. The only toxin which can be



effectually neutralised is that in the blood and lymph. Antitoxin is transported by the lymph and the blood; it is not taken up by the nerves, and there is no reason for thinking that it ever gets into nerve cells. It does not pass in any large proportion into the cerebro-spinal fluid after intravenous injection. Even in highly immunised animals the antitoxin in the cerebro-spinal fluid is more than a hundred times less per cubic centimetre than in the blood. Naturally, antitoxin injected into the subarachnoid space would neutralise any toxin which might be there. Moreover, as antitoxin passes very rapidly out of the cerebro-spinal fluid into the blood stream, it would, if in excess, neutralise any toxin in the circulation.

The therapeutic use of antitoxin is, however, fully justified, nay, imperative, because in any given case it is impossible to say whether the toxic dose already in the nervous system is or is not a fatal one; the prompt use of antitoxin may neutralise just that last amount of toxin in the blood which, if it had got into the nervous system, would turn the balance against the patient.

The great question still undecided is how best to apply the antitoxin therapeutically. The answer can only be given after detailed examination of a large number of carefully classified cases. In the therapeutic use of antitoxin everything depends upon time, and hence the immense importance of careful search for the earliest symptoms and the unhesitating employment of serum upon their recognition.

ANALYSIS OF 102 CONSECUTIVE CASES OF TETANUS

TREATED AT SIR J. J. HOSPITAL, BOMBAY, INDIA, FROM OCTOBER, 1915, TO JULY 31ST, 1917.

BY NAVROJI ARDESHIR COOPER, B.A., B.HY., M.D. BOMBAY.

IT will, I think, not be out of place to say a few words as to how this disease is regarded here by the poor and ignorant classes.

Nature of Cases and Results of Treatment.

All the tetanus cases that came under my treatment belonged to the labouring classes, who are generally very poor, illiterate, and completely ignorant of the grave nature of the disease; further, they are highly superstitious. As a class they do not, in most cases, come to the hospital for prompt treatment as soon as tetanus occurs, for it appears to be their common belief that this disease is the outcome of the wrath of some evil spirit or witch. Naturally, therefore, in accordance with their custom, they invoke the help of the gods and goddesses by propitiation and religious offerings through the so-called professional "magicians," whom these highly credulous people believe to be experts in the cure of this disease. Moreover, they seem to suppose that these persons possess the necessary physical and hypnotic control over the evil spirits, who, it is imagined, cause this disease. Thus it is that they suffer the "magicians" to do all sorts of things and even at times to strike the patients ruthlessly in order "to cast off spirits" from their bodies. The result is that they are not brought to the hospital for treatment until their condition has become either worse or hopeless. Out of 102 cases treated during the period of nearly two years, 27 died within a few hours after admission. All these 27 cases were not seen by me, as they were admitted after I had left the hospital for the day.

Of the remaining 75 cases (see Table I.), two had to be discharged against advice, 42 recovered, and 31 died, as follows:—Died within a few hours, 4; within 24 hours, 9; within 48 hours, 7; within 3 to 5 days, 5; died of pneumonia (food), 2; died of hyperpyrexia, 1; died in 6 to 7 days, 3.

Under the treatment described below some of the worst cases have yielded very readily—cases occurring a few hours to a few days after infection, accompanied by very severe spasms and intense agonising pains in the muscles, &c., and with but short remissions between the spasms. The results have been so encouraging that I place them before the medical profession in the hope that attention, particularly of medical men in charge of tetanus hospitals, may be drawn to the combined treatment.

I cannot but point out here some inconveniences. First comes the unsuitable position of the tetanus wards. The arrangements to exclude light and air are poor. Noise is heard at times the whole day from an iron workshop about a dozen yards away, and morning and evening numbers of bullock carts pass near the wards. Secondly, there are too frequent changes of nurses, who are at times removed when they have begun to be useful, and new ones have to be trained. Last, but not least, is the difficulty of getting the required drugs (at times even simple drugs), let alone the antitetanic serum and the necessary apparatus. In spite of all this, I have been able to achieve results which appear to be the best hitherto obtained here, and I presume that my treatment, if judiciously made use of, may produce still better results.

TABLE I.—*Method of Treatment of 75 Cases with Results.*

1. Treatment by drugs—e.g., sedatives and hypnotics.

Total cases.	Died.	Recovered.	Mortality %	Recovered %
16*	9 (6 most severe. 2 very severe. 1 severe.)	7 (1 very severe. 5 not severe. 1 chronic.)	56·2	43·7

* 1 discharged against advice (was improving).

2. Treatment by carbolic acid injections, sedatives, and hypnotics.

12	8 (4 most severe. 1 very severe. 3 severe.)	4 (2 very severe. 2 severe.)	66·6	33·3

3. Treatment by carbolic acid injections, antitetanic serum, sedatives, and hypnotics.

4	2—very severe.	2 (1 severe. 1 not severe.)	50·0	50·0

4. Treatment by antitetanic serum, sedatives, hypnotics, and chloretone rectal injections.

20†	8 (1 most severe. 6 very severe. 1 severe.)	12 (2 severe. 1 chronic. 6 not severe. 3 very severe.)	40·0	60·0

† 1 very severe (discharged against advice).

5. Treatment by chloral hydrate intravenously, sedatives, hypnotics, and chloretone enema injections.

4	2—very severe.	2 (1 very severe. 1 not severe.)	50·0	50·0

6. Treatment by antitetanic serum, chloral hydrate intravenously, sedatives, hypnotics and chloretone rectal injections. (Special combined treatment.)

17	2—very severe.	15 (2 most severe. 7 very severe. 6 severe.)	11·7	88·2

All these 102 cases had never had a dose of prophylactic antitetanic serum.

The results of the tetanus cases treated at the J. J. Hospital (as per hospital registers) from 1910 are given in Table II.

TABLE II.—*Tetanus Cases at J. J. Hospital from 1910-17.*

Years.	Cases treated.	Died.	Recovered.	Otherwise.	Recovered, per cent.
1910–1911	45	33	9	3†	20·0
1912–1913	70	40	23	7‡	32·8
1914–1915, up till September ...	78	48	29	1§	37·9
1915, October, to 1917, July ...	102	31	42*	28	43·0

* 1 discharged against advice (was improving). † 1 discharged as requested, 2 no notes as to what became of them. ‡ 6 no notes, &c., 1 discharged in one day as cured? § 1 no notes, &c. ‖ 27 not seen, 1 discharged against advice (very severe).

It will be seen that the admissions are increasing every year and also that there is a corresponding improvement in the recoveries. Yet I feel sure that better results will be secured in future if greater facilities are afforded to the medical officer in charge of these cases.

Clinical Remarks.

My own experience in the use of antitoxin as a prophylactic is nil, for I have never had a chance of using it as such. However, the various reports speak very highly of it if properly given and in sufficient doses, combined with necessary drugs, injections, &c., together with proper nursing.

I have noticed in a few cases very persistent spastic rigidity of the wounded limb with tetanic spasms. This rigidity remained for days together, though the spasms stopped after a few days. In two cases of spastic rigidity of the wounded limb I noted the relaxation in it after intranervine injections of antitetanic serum. In one case of trismus, treated with drugs only, there was no improvement for days together, until two intravenous injections of antitetanic serum produced the desired effects. Purely local tetanus cases I have never had occasion to see, but a case with trismus of the jaw did occur in my experience with fatal results within a few hours. The patient had a wound in the chin and was intensely anæmic.

The mortality in tetanus cases increases with the involvement of higher centres and the earlier appearance of the disease after infection.

The symptoms are produced according to the parts of the nervous system involved.

The most susceptible centres that suffer earliest are those of the pons and medulla. When the site of infection is near the cranial nerves they suffer directly and early, or sometimes through the blood stream in an indirect way. Hence the antitoxin that circulates in the blood acts better in protecting the higher centres from further damage to them than the spinal ones directly accessible from the wound. Here, therefore, comes the importance of intravenous injections of antitetanic serum in tetanus cases.

Many of my tetanus cases had no evidence of any injury on their bodies, though some of them were cases in their worst forms. The explanation for this is that those patients had been injured weeks or months ago, but that the bacillus or spore implanted in the wound did not germinate into a number of bacilli with production of toxin for a very long period, though the wound healed up completely, until it found favourable conditions for its growth. Hence the so-called idiopathic cases of tetanus.

Details of Treatment.

In a fairly developed adult patient with severe form of tetanus I give the following treatment:—

℞ Chloral. hydrat. ... ... gr. xx	℞ Chloretone ... . gr. xxx
Pot. bromid. .. .. gr. xx	Olive oil... ... ... ʒ iv
Tr. digitalis ... ... m. x	Per rectal injection twice a day.
Tr. hyoscyami ... ... m. xx	℞ Calomel ... ... gr. v
Spt. chloroformi... ... m. x	Sod. bicarb. ... ... gr. x
Aq. chlorofor. ... ... ʒ i	One at bed-time when required.
Every four hours.	

About 30 to 40 c.c. chloral hydrate, 5 per cent. sterilised, intravenously daily until sound sleep is produced and spasms become less.

Antitetanic serum 3000 units or more intravenously daily until the spasms have stopped. Sometimes with very severe spastic rigidity it is given for a few days, though in small quantities.

Chloral hydrate intravenously and chloretone per rectum are given daily, until contra-indicated. When they produce detrimental effects on the heart, or the heart sounds become feeble or the patient becomes very low they are completely omitted and the mixture too is changed by the replacement of chloral hydrate and pot. bromide by ammon. bromide, caffein. citras, &c. Alcohol, pituitrin, adrenalin, morphia, camphor and olive oil, &c., are given by mouth or by injections as required. Other complications are treated on ordinary lines.

Bombay.

CORNWALL COUNTY COUNCIL AND TUBERCULOSIS.—The Cornwall County Council has decided to equip and maintain Tehidy mansion as a sanatorium for tuberculosis, provided the residents of Cornwall will purchase the property and present it as a "war memorial" to the county council. The Tehidy estate, comprising 250 acres, can be purchased for £10,000. The scheme has been warmly taken up, £7000 have been already subscribed, and there is no doubt but that the whole of the sum required will be raised.

THE LATE DR. F. E. WALKER.—Frederick Edward Walker, M.B., B.S. Lond., whose death occurred on Dec. 7th, at Uxbridge, at the age of 43 years, served as civil surgeon during the South African war, attached to the 3rd Durham Light Infantry, receiving the Queen's medal and three clasps. In addition to the work of a busy general practice, he held posts on various public bodies. He was a member of the urban district council and captain of the local fire brigade. Dr. Walker leaves a widow and two young children.

ON CERTAIN FORMS OF ALBUMINURIA AND POLYURIA: THEIR CAUSE AND CURE.

BY EDGAR F. CYRIAX, M.D. EDIN.,
VISITING PHYSICIAN, SWEDISH WAR HOSPITAL, LONDON.

DURING the last few years a good deal has been written on the subject of two varieties of albuminuria—namely, the lordotic and the orthostatic—and on functional polyuria, and various theories have been put forward as to the cause of these conditions. Most observers are agreed that there must be faulty innervation of the nerves of the kidney, either in the form of vaso-motor disturbance or neurosis of the abdominal sympathetic. But no one, as far as I know, has been able to advance any explanation as to why such nerve derangements should result and persist.

Causation.

I have examined a considerable number of such cases, and have come to the conclusion that in many of them the *original* cause of the albuminuria or polyuria is to be looked for in irritability of varying intensity, causing persistent contraction, of certain of the muscles in the renal area—i.e., psoas, erector spinæ, and, to a less extent, the quadratus lumborum.

The method by which these muscular contractions produce disturbance in the kidney function is by irritation of the renal sympathetic nerves, either directly through the psoas and quadratus on which these nerves lie, or indirectly through the erector spinæ affecting the posterior dorsal nerves. The connexions between the latter and the kidney have been studied anatomically, physiologically, and therapeutically.

This theory of muscular irritability also explains why the recumbent position brings about improvement in the albuminuria or polyuria, as the case may be. It does so by causing a greater or less degree of relaxation in the contracted muscles, whereby the irritation of the renal sympathetic is proportionally reduced. Incidentally also the theory of psoas contraction as a cause of lordotic albuminuria explains how, when the recumbent position has removed the albumin, it sometimes reappears when a cushion is placed under the lumbar vertebræ so as passively to reproduce the lordosis. This latter position causes elongation of the psoas, and this in its already irritated state is sufficient to cause it to contract, a state of matters which would not obtain in normal subjects.

These irritative muscular states may be primary, and are then generally of rheumatic or traumatic origin, or secondary to articular, ligamentous, or cartilaginous disturbance in the vertebræ; the spinal column can be affected by joint synovitis, slight displacement of bones or cartilages, just as joints elsewhere.[1]

This leads me to say a few words from the view of cause and effect about visceral disease and their "referred pains." At the present day, if a tender spot be found in any spinal area corresponding to a particular viscus, the tendency is to take it for granted that the tender spinal area is a "referred pain," and is secondary to the visceral lesion. I consider that not infrequently the opposite is the case—i.e., that these pains are not "referred," but are really the manifestation of the cause, or one of the causes—namely, irritated erector spinæ states. Of course, in advanced cases vicious circles are easily, in fact usually, set up.

Illustrative Cases.

The identification of these muscular contractions as one of the exciting causes of certain forms of kidney disease is, of course, of value therapeutically, as one of the important factors in cure or amelioration is the removal of such contractions. The effect of limiting the treatment to this alone can be seen in the two illustrative cases, both of officers treated in the Swedish War Hospital, though I must add that I nearly always in addition employ kidney vibrations, frictions on the nerves in the affected area, active exercises, &c., according to the methods of the late Henrik Kellgren, as thereby the best results are obtained.

CASE 1.—Lieutenant ——, aged 48, was admitted on Jan. 28th, 1917, suffering from the after-effects of an attack of hæmaturia.

[1] Cyriax, Practitioner, 1916, xcvii., 464-471.

History.—On Dec. 16th, 1916, he had a severe attack of hæmaturia which lasted for four days, after which it subsided. He had a continual desire to micturate and had actually to do so every half hour. The blood was mixed with the urine and was of a bright colour. There was no pain or swelling. In spite of the attack, however, he remained on duty in the trenches until Dec. 22nd, when he felt so weak that he had to stop and report himself sick. He was sent down to hospital and put to bed for a week. At the end of this time there was no longer any blood in the urine, but the frequency of micturition was very much increased, necessitating evacuation of the bladder about every one and a half or two hours during the day and two hours during the night. There does not appear ever to have been any albumin. The urine was increased in amount; the notes of the case while still in hospital in France showed the average amount per diem from Jan. 10th to 16th to have been 105 ounces. From the same notes it appears that the specific gravity of the urine as estimated on Dec. 31st was 1010.

Examination, Jan. 27th, 1917.—The patient complained of general weakness, part (but by no means all) of which he considered to be due to his nights being disturbed by frequent calls for urination. There was no actual tenderness on pressure over the kidney itself, but a good deal over the erector spinæ close to the middle line in the lower dorsal and lumbar region. These muscles could be seen to be very rigid and contracted. When lying flat on his face on a couch, these muscles only slightly relaxed, and efforts by gentle pétrissage or passive lumbar dorsiflexion by raising the shoulders to cause entire relaxation were quite unsuccessful. When placed on his back, passive flexion of the hips and knees (i.e., attempting to bring the patient's knees up to his chin showed great limitation of range, pointing to diminution in the amount of extension of the lumbar vertebræ, and induced a feeling of great tension in the patient in his lower dorsal and lumbar region. When he stood erect some lordosis was visible; this quite disappeared when he lay down.

Urine.—He micturated about 8 to 10 times during the course of the day and about 6 times during the night. There was increase in the actual amount (see below), specific gravity 1010, no blood or albumin. The urinary condition had been practically without change during the last four weeks. Blood pressure: maximum 116, minimum 70, as estimated with Martin's Riva-Rocci apparatus. Pulse somewhat irregular.

Treatment.—This was commenced on Jan. 29th; inasmuch as I considered that the kidney condition was entirely dependent upon the muscular contractions, I limited it to mechano-therapeutics in order to remove them (i.e., passive rotations of the lumbar region when the patient was lying on his side, passive flexion of the hips and knees when he was lying on his back, and pétrissage of the muscles, applied very gently at first. Inasmuch as no vibrations, nerve frictions, or abdominal pétrissage was employed, the direct effect on the kidney itself was to all intents and purposes nil, the treatment having its sole effect upon the contracted muscles. The treatment was applied four or five times a week until April 26th, the total number being 56.

Progress.—Feb. 3rd: the erector spinæ contraction is diminishing. Feb. 5th: the frequency of micturition has commenced to decrease. From this date onwards steady improvement in the symptoms. As regards the frequency of nocturnal micturition: Feb. 5th–7th, 5 times; Feb 8th–9th, 4 times; Feb. 10th–18th, 3 times; Feb. 19th–March 22nd, 3 to 4 times; after that, twice. As regards the amount of urine passed: Feb 12th, 120 ounces; Feb. 15th, 87 ounces; March 7th, 76 ounces; March 10th, 60 ounces; March 29th, 52 ounces.

On March 30th the patient went to a convalescent home until April 27th; during this interval the treatment was applied as usual.

A sample of urine taken on March 25th showed the specific gravity to be 1018; no blood or albumin. Ever since March 5th the patient declared that he felt very well, better, in fact, than for several years past.

At the conclusion of the treatment the contraction in the erector spinæ had quite disappeared, and there was no longer any of the limitations of movement mentioned above. Very little change in the condition of the lumbar curve when lying down, but considerable diminution when standing up.

Blood-pressure readings the same as before; no irregularities of the pulse.

Subsequent progress.—On July 18th I heard that the improvement in the urinary condition had been fully maintained since I last saw him.

CASE 2.—Lieutenant ——, aged 23, was admitted on May 13th, 1917, suffering from the effects of contusion of the back.

History.—On May 6th two shells burst in rapid succession near him; the first caused a quantity of earth to be projected against his back and the second one buried him. When he was unearthed he was very dazed and shaken; his back was very stiff and gave him great pain. On May 13th he came to the hospital and on examination I found all the signs of a contused back from sacrum to the upper dorsal region—i.e., rigidity, pain, great tenderness on pressure, inability to lie on his back or to remain long in any position, &c. Some slight discolouration due to bruising was still visible. A skiagram taken of the back was negative. I recommended mechano-therapeutics for his back, but owing to a sudden influx of cases and temporary shortage of workers this could not be commenced for a few days; pending its application rest was prescribed.

The patient improved until May 21st, when he complained of feeling weak. Dr. C. Westman, the resident surgeon, tested the urine and found a trace of albumin; on testing the blood pressure with Martin's Riva-Rocci apparatus, he found the readings were 148, 83. Strict rest in bed and light diet were enjoined. The following day there was the same amount of albumin, and the blood pressure was 148, 82. The next day (May 23rd) there was a much larger quantity of albumin, which was found the next morning to be 2·8 per cent., and the pressure was 160, 88.

I therefore decided to commence the special treatment at once, acting on the same theory as mentioned under the first case. It was accordingly applied on the morning of May 23rd and proceeded with daily until the patient's discharge on June 21st. At first (until May 27th, on which day the albumin disappeared) it was limited to passive movements applied to the erector spinæ in order to reduce the pain and rigidity; on and after May 27th abdominal pétrissage was added.

The immediate effect of the treatment was a great diminution in the pain and tenderness in the erector spinæ, and as regards the albumin only a trace was found in the 24-hour specimen on May 24th, 25th, and 26th; on and after May 27th not even a trace was detected. On May 26th there was no more rigidity in the erector spinæ, and no tenderness on pressure. On May 28th the patient was allowed to get up, and on June 4th he was permitted to go for a short walk. On June 8th ordinary diet was resumed. On June 12th he left the hospital, as he was quite well. The blood pressure on June 11th after an hour's walk was 138, 100.

I wish to express my thanks to the medical committee of the hospital for permission to publish the above cases, and to Dr. Westman for all the work in connexion with the urine analysis.

Welbeck-street, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

An Attempt at the Experimental Production of Carcinoma by Means of Radium.—Explosive Phenomena in Gunshot Injuries.

A MEETING of this section was held on Dec. 4th, Professor W. BULLOCH, the President, being in the chair.

Dr. W. S. LAZARUS-BARLOW showed microscopic slides and a considerable number of lantern slides from rats and rabbits, in which he had endeavoured to produce carcinoma experimentally. In the case of the rat minute tubes containing radium in amounts of the orders 10^{-5} to 10^{-1} mgr. (calculated as element) were introduced beneath the skin. These experiments were undertaken on the basis of the facts that exposure to X rays caused squamous-cell carcinoma of the hand, and that small quantities of radium had been demonstrated by him to be of frequent occurrence in carcinomatous tissue. In the case of the rabbit small gall-stones obtained from the human subject and proved to be devoid of radium by alpha-ray electroscopic analysis were artificially impregnated with radium and introduced into the gall-bladders of the animals. These experiments were based on the fact that he had found a marked difference between the radium content of gall-stones in man according as they were associated with cancer of the gall-bladder or not; gall-stones associated with cancer of the gall-bladder contained relatively large quantities of radium, whereas gall-stones associated with cancer of other parts, or unassociated with cancer, contained mere traces of radium or none could be detected. The experiments were commenced in May, 1912, and were not yet complete. He had not succeeded in producing in the animals the clinical condition known in man as cancer, but in the skin of rats he was able to produce, by means of suitable doses, an irregular, considerable overgrowth of squamous epithelium which sent processes into the corium, was frequently supplied with well-marked cell-nests and was indistinguishable histologically from a very early squamous-cell carcinoma in man. This condition could be produced at will, but if the action of the radium persisted the newly formed cells came under its destructive influence, and if the radium were removed the skin condition receded with some rapidity, leaving merely a thin scar tissue devoid of hair and hair follicles. The gall-bladder of rabbit experiments showed a more advanced condition, and a marked contrast obtained between the appearances of the gall-bladders according as the gall-stones introduced experimentally into them contained radium or not. Whether containing radium or not, there was a great thickening of the connective tissue of the gall-bladder, and this Dr. Lazarus-Barlow ascribed to the mere presence of the gall-stone as a foreign body. But a fundamental difference obtained in the behaviour of the columnar epithelium lining the gall-bladder according as the calculus which it contained were radium-free or impregnated with radium. If the calculus were radium-free the most that occurred was a slight polypose overgrowth of the epithelium with an excessive formation of mucus; there was no tendency of the epithelium to invade the wall of the gall-bladder. On the other hand, when the lining membrane of the gall-bladder had been exposed to the action of a gall-stone containing radium, the epithelium showed changes indistinguishable from those occurring in columnar-cell carcinoma, in that there was an irregular over-

growth of the epithelium which projected into the cavity of the gall-bladder and invaded the thickened wall of the viscus in an irregular manner. As a consequence of the invasion, parts of the thickened gall-bladder wall showed the presence of irregular tubules lined with columnar epithelium, grouped in irregular fashion, through a less or greater thickness of the gall-bladder wall, and usually preceded by a zone of lymphocytes. In one rabbit a metastatic focus exactly recalling the appearances in the gall-bladder itself was found in a distant part of the liver. This was the sole metastasis found in the entire series of experiments which involved 122 rats, 6 radium gall-stone rabbits, and 3 control rabbits. Reference was made to experiments on the same lines carried out on mice at an early period of the research. In these animals the radium was not contained within tubes, and though introduced beneath the skin in the axillary region in the form of an insoluble sulphate or silicate, was found to disappear from the body within a few weeks. In addition, it was not found easy to keep the animals alive for a prolonged period. Nevertheless, of 67 radium mice living six months after inoculation 5 developed definite malignant tumours of the mamma (one animal bearing two primary tumours) and 7 other animals developed doubtful tumours (1 papilloma and 6 nodular masses, chiefly in the neck, as large as peas, oscillating in size and finally disappearing). Thirteen control animals inoculated the same way but without radium and also living six months after inoculation showed no tumour formation whatever.—Professor S. G. SHATTOCK, whilst fully recognising the value of Dr. Lazarus-Barlow's results, and the prospect they opened up of further developments in experimentation upon the etiology of carcinoma, did not consider that the lesions could safely be regarded as more than pre-cancerous. The downgrowth of the epidermis in the rat's skin in no case transgressed the limits of the corium; and on the removal of the radium the changes, instead of progressing, disappeared. In regard to the proliferative changes set up in the mucosa of the gall-bladder by the action of radium introduced into gall-stones, those seen in the bile-ducts in coccidiosis of the rabbit's liver were quite as pronounced. The speaker held that for the production of carcinoma there still remained a second factor which needed discovery. Dr. Lazarus-Barlow's view that this consisted in a lessened resistance required scientific demonstration; nor was it logically the only other possibility, for there might be a second *extraneous* factor, such as the access of an ultramicroscopic virus. A further point against the change in the gall-bladder being carcinomatous was the circumstance (as Dr. Lazarus-Barlow stated in answer) that the epithelial cells did not yield the proper Altmann granule test. Amongst Dr. Lazarus-Barlow's results there was one in which a metastasis had occurred in the liver; but here a second extraneous factor might have come into play, and the inflammatory proliferative process have been followed by the growth of a proper carcinoma.

Professor SHATTOCK read a paper on Explosive Phenomena in Gunshot Injuries. He observed that from the strictly pathological standpoint the new factor introduced into gunshot injuries, as injuries, was the velocity of the penetrating body; they were otherwise contused and infected wounds like those produced by other foreign bodies, although their number and variety gave them special surgical features. Under the term "explosive effect" more than one thing was included: it was applied (1) to the increase of damage due to shattering of the bullet; (2) to the additional injury resulting from the comminution of a bone and the dispersal of its fragments; and (3) to the damage resulting from the high velocity of the missile, the last alone possessed any special pathological interest. It had been asserted (Professor Dr. K. Stargardt) that the British bullet was an expanding one in consequence of the core being composed of aluminium at the point and elsewhere of lead; that on striking (bone at least) the momentum of the lead carried this forwards over the harder aluminium, and so split the mantle. In order to test this, the author had had recourse to the following experiment. The bullet was fired at a distance of 20 feet through a sterna to cotton-waste, from which it was recovered without having struck any second object. The sternum was ed in order to obtain a direct hit. The bulle found to have undergone no distortion whatever sterna were then spliced together and shot through in t e way; the bullet on recovery was found quite and . In solid organs the results of high velocity were best seen in the liver when perforated by rifle bullets at close range. The typical injury was a perforation accompanied with radial fissuring of wide extent. Even here the elimination of extraneous factors, such as obliquity of impact or turning of the missile in transit, damage due to the introduction of clothing, could only be effected by experiment. In firing through suspended sheep livers at 20 feet with a service rifle and pointed bullet this was the form the injury took; the mechanical action of gas produced by explosion was eliminated by the distance. In analysing the physics of this result the wave of compressed air produced by the bullet (demonstrated by Professor Vernon Boys in instantaneous photography) was wholly negligible. The speaker had found that if tense screens of tissue paper were shot through at 20 feet with a service rifle, the hole was but little larger than the bullet; were the air wave of any moment the paper would obviously have been widely rent. Sir Victor Horsley in commenting upon the cavitation produced in his experiments of firing into clay, attributed more importance to the spin of the bullet (centrifugal action) than to its forward movement. The speaker had carefully inspected all the plaster-casts made from the clay in these experiments, and was unable to find the evidence of such rotation; the coarser ridges (representing shallow fissures in the clay), as well as the finer markings, were longitudinal. The turn of the present British bullet was once in 10 inches; yet explosive effects were observable in, e.g., the sheep livers before referred to, where the thickness was only 1½ inches, which would reduce the rotation to less than one-fifth. In only one specimen in the collection on view in the Royal College of Surgeons of England were the divergent fissures curved; here the bullet had traversed the body of the third lumbar vertebra first, and must have had some altogether exceptional twist imparted to it. The question was thus reduced to one of forward velocity. This was well shown in the liver by the fact that in perforations caused by shell fragments at low velocity a patulous tunnel alone resulted. The same difference was beautifully demonstrated in Horsley's casts, where the distal half was only of the calibre of the bullet, the explosive or dilating effect being limited to the proximal. In the case of the clay, the ready entrance of air from behind allowed of its cavitation; in the liver, where this was out of the question, the cavitation was represented by radial fissuring produced by the passage of the wave through an incompressible semi-solid medium. In *hollow organs* the production of explosive effects depended upon their contents, other things being equal. Such effects from rifle bullets were not observed in the stomach or intestines by reason of the compressible air and gas which they contained, nor in the lung for the same reason. The contusion, unattended with breach of surface, found not rarely in such organs was possible from their extreme mobility and compressibility. The longitudinal wounds produced at times in the intestine by intact bullets were explained by the wall having been struck axially. In the case of the bladder, the contents of which were incompressible, explosive results were now and then encountered. In the collection there was a bladder perforated by a rifle bullet which entered through the buttock without fracturing bone, and eventually escaped above the pubes; in the posterior wall of the bladder was an entry admitting the finger; the anterior wall (exit) was rent from top to bottom. The speaker had obtained similar explosive results by firing through ox bladders distended with water, a service rifle being used at 20 feet. The result was a simple hydrodynamic one and due to the wave imparted to the mobile and incompressible fluid in a confined space. If the bladder was empty or only lightly filled the rending on the far side did not take place. In arteries and veins no hydrodynamic effect was observable, whether in unilateral or bilateral perforation. Its absence was possibly due to the indefinite continuity of fluid above and below the stricken spot, and to the remarkable strength of both kinds of vessels. The speaker had been unable to produce either macroscopic or microscopic damage of the inner or middle coats of the human common iliac artery under the highest water pressure that could be exerted with a dissecting-room syringe. In regard to the skeleton, the rigidity of the structure concerned was a complicating factor. If the upper part of the shaft of the tibia was compressed over a small area in a vice, however *slowly* the compression was made, extensive comminution and fissuring ensued far beyond the spot com-

pressed. Nevertheless, the same rule held: the greater the velocity of the missile the greater the damage. The classical example of explosive effect was the well-known and widespread comminution of the skull when bilaterally perforated by a rifle bullet at close range. The effects due to the gas of explosion had, of course, to be excluded. The results of suicidal shooting were thus liable to lead to fallacious conclusions; a rifle fired into the mouth with blank cartridge would produce extensive comminution. This factor was, however, easily excluded; the speaker, too, had found that sheep skulls with the brain *in situ* underwent extensive comminution when shot through at 20 feet with a service rifle, the foramen magnum being freely open. The result was not, properly speaking, hydraulic but hydrodynamic—i.e., it was not due to a generalised and equable internal pressure, but to the sudden impact of the incompressible cerebral substance against the interior of the cranium. A simple experiment, devised by the speaker, would emphasise this. A large flat-sided "cocoa-tin" was shot through in the empty state, at 20 feet, with a service rifle; a circular entry and exit of about the diameter of the bullet resulted. A second tin was filled with water and similarly shot through, the *lid being removed*. The entry was small and circular; the exit widely split, with large triangular flaps of the metal completely everted. The speaker had obtained pronounced explosive effects also in sheep skulls inverted and filled with water, *the foramen magnum being freely open*. If the skull was shot through in the empty condition a circular entry and exit alone resulted.

SECTION OF LARYNGOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Dec. 7th, Dr. A. BROWN KELLY, the President, being in the chair.

The PRESIDENT showed a "Teratoid Growth or Hairy Polypus of the Nasopharynx." The specimen was a long, tongue-shaped growth which protruded frequently from the mouth of a female infant. The growth was first noticed when the baby was a week old, and was removed when the child was six weeks of age. It was attached to the left side of the nasopharynx by a fine pedicle. It could be drawn out of the mouth so as to protrude three-quarters of an inch beyond the lips. After removal it was found to measure two inches in length and half an inch across at its widest part. It was of fleshy consistence and was covered with skin furnished with numerous fine hairs. The central portion of the polypus consisted of tissue closely resembling fat.

The PRESIDENT also exhibited a collection of Dental Cysts and Cysts of the Floor of the Nose. He pointed out that dental cysts which invaded the antrum had been regarded erroneously as "hydrops antri Highmori," or "distension of the maxillary sinus by fluids or mucous cysts." Whereas the cysts really arose outside the antrum, and only pushed their way in as they grew larger. Dental cysts may also, he said, produce a bulging of the floor of the nose, and by extending upwards raise the ala. They must be differentiated from cysts of the floor of the nose, which were retention cysts and presumably arose from long ducts present in this situation.—Mr. H. TILLEY said that, in his experience, cysts of the floor of the nose were always associated with carious teeth and the fluid inside contained cholesterin crystals. He would like to know if the retention cysts mentioned also contained cholesterin crystals.—The PRESIDENT, in reply, stated that he was sure the retention cysts were not connected with the teeth. He did not know if cholesterin was present in the fluid.

Dr. WILLIAM HILL exhibited a patient whose pharyngeal pouch had been treated by a novel method. The man, aged 43, complained of dysphagia, regurgitation of food and gurgling for six months. The existence of a pouch was demonstrated by endoscopic and X ray examination. At the operation the pouch, which was bound to the gullet by fascia, was dissected free, and then the fundus of the unopened pouch was sewn to the left side of the inferior constrictor muscle. A ligature was placed round the neck of the sac in order to prevent food entering, but not tight enough to cause strangulation. For the time being, all symptoms had disappeared. He claimed that the operation was not difficult to perform. There was little risk to the patient, and if at a later date excision of the sac became desirable the operation would be in the neck and not in the mediastinum.—Mr. E. D. D. DAVIS said that Mosher had operated by cutting away the septum between the gullet and the pouch by endoscopic methods. It was therefore desirable to know how firmly the pouch was bound to the side of the gullet. He knew of a case in which Major Waggett had invaginated the pouch, but later, after a violent sneeze, the pouch reappeared. He also knew of a case in which after excision the sac formed again.—Sir STCLAIR THOMSON also knew of a case in which there was recurrence after removal of the sac.—Dr. DUNDAS GRANT thought that when the sac was long Mosher's operation would not be successful. In his opinion dilatation of the upper end of the œsophagus should be practised after operation in order to prevent recurrence.

Cases and specimens were also shown by Dr. GRANT, Mr. TILLEY, Mr. HUNTER TOD, Sir STCLAIR THOMSON, Dr. W. JOBSON HORNE, Dr. W. H. KELSON, Mr. NORMAN PATTERSON, Dr. W. H. JEWELL, Dr. IRWIN MOORE, Mr. GEORGE C. CATHCART, and Dr. DAN MCKENZIE.

SECTION OF ELECTRO-THERAPEUTICS.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this section was held on Nov. 16th, Dr. G. HARRISON ORTON, the President, being in the chair.

Dr. E. P. CUMBERBATCH showed a girl in whom a Nævus of the Nose and Air Sinuses had been successfully treated by means of X rays. At the age of 5 she developed a nævus on the nose, and had as a symptom hæmorrhage. The neoplasm extended into the nasal chambers, the antrum, and nasal sinuses. At times the bleeding was very copious. At times arteries were tied, but occasional profuse hæmorrhages still occurred; even ligature of the external carotid did not check them. As she came to the hospital blanched, and there was nothing left to tie, she was brought to the X ray department. Treatment here was commenced in November, 1911, and was carried out tri-weekly. There was not much diminution until January, 1912; in March and April there was no hæmorrhage. The treatment was continued until the middle of the year. Later in 1912 she had another severe attack, and resumption of the rays brought about diminished bleeding at rarer intervals. She remained fairly free until August, 1914, when a severe hæmorrhage occurred from an artery on the nasal septum. Treatment of this was by the diathermic cautery, and no further bleeding occurred for three years, until a slight attack a fortnight ago. He asked for views as to whether the diminution of the bleeding could be directly attributed to the X rays. In the first treatments she had a Sabouraud dose unfiltered at 3-weekly intervals; in the second series a half Sabouraud dose filtered through $\frac{1}{2}$ mm. of aluminium.

Dr. REGINALD MORTON said he had not treated nævus with X rays; for these he had managed with either electrolysis, the cautery, or CO_3 snow. But he had not encountered a nævus invading the nasal sinuses. The result in this case seemed encouraging. It was doubtful whether the dosage given in this case sufficed to produce endarteritis obliterans and so cause shrinkage of such a growth. The blood-vessels of a nævus were not so richly lined with endothelium as were normal vessels.

Dr. F. HERNAMAN-JOHNSON said he had treated such cases with small doses of rays two or three times weekly for six or eight weeks, and then left the condition alone. But none of the cases were hæmorrhagic.

Dr. MORTON showed skiagrams of a remarkable case of Hair-ball in the Stomach. The case, that of a woman under the care of Dr. Robert Hutchison, was one of gastric disorder of a very puzzling nature. She could not take more than 6 or 7 ounces of food at a meal, and the whole of it remained in the fundus, and the lower level of an opaque meal, instead of being cup-shaped, was horizontal. It became obvious that the trouble was due to the presence of a hair-ball. This was removed and was found to weigh 3 lb; its length was 12 in. and its greatest circumference 9½ in. As a schoolgirl the patient had been in the habit of pulling out single strands of her hair and swallowing them. The specimen is in the Museum of the Royal College of Surgeons of England.

Dr. A. C. JORDAN read a contribution on a method of control of the Coolidge tube.

Among the appliances exhibited was one by Dr. ALASTAIR MACGREGOR, adapted from a French invention, in which water was used as the rheostat, for producing a slow or quick rise and fall of galvanic current from zero to maximum, in either direction.

Reviews and Notices of Books.

A Manual of Pharmacology and its Applications to Therapeutics and Toxicology. By TORALD SOLLMANN, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine in the Western Reserve University, Cleveland, U.S.A. With 29 figures in the text. London and Philadelphia: W. B. Saunders Company. 1917. Pp. 901. Price 20*s.* net.

THE revision of the United States Pharmacopœia has apparently induced Professor Sollmann to issue a new edition of his well-known text-book, or rather, it might be said, to write a new one, for the changes are so many and the outlook in therapeutics so different since the first edition appeared in 1901 that it cannot be regarded as a mere revision. As is stated in the preface, the book has two objects: first, to convey the broad conceptions and generalisations which are necessary for the everyday work of the student and practitioner and which must be assimilated in undergraduate days; secondly, to serve as a book of reference in regard to questions which may present themselves at any time in the use of drugs, and in the instruction of more advanced students. With these objects in view, the manual is printed in two types, the larger subserving the first of giving a general view while the smaller type deals with less essential details. Opinions may differ as to the appropriate allocation of some paragraphs, some of those printed in small type might be dignified with the larger, and vice versa, but, on the whole, the compromise seems satisfactory. In the smaller type the recent literature is succinctly dealt with; we wish that Professor Sollmann had more often expressed his own views in regard to contradictory statements cited; his wide experience in experimental work would often aid in determining contested questions where ordinary readers may have difficulty from their unfamiliarity with the original papers and their ignorance of the capacities of the conflicting writers.

The arrangement of the chapters in a text-book of pharmacology presents great difficulties and has not been entirely successful in any hands so far. Professor Sollmann states that he follows in the main the classification introduced by Buchheim, and as far as the grouping of very closely related bodies—for example, the atropine class—he agrees with that adopted by all the better text-books of the day. But we have failed to understand on what principle the larger arrangement is based. Has the author given it up in despair? For example why should phlorhizin be placed in the midst of the animal extracts and why is the discussion of anaphylaxis inserted between the paragraph on viburnum and the chapter on nitrites?

On some minor points we would join issue with the author. He seems to doubt the identity of yohimbine with quebrachine, though this was established by Fourneau's researches, for he appends the former rather notorious alkaloid to the cocaine group and makes no reference to it under aspidosperma. It may be doubted whether chloroform or morphine causes the appearance of glycuronic acid in the urine, but the juxtaposition of these drugs with chloral and camphor (p. 477) suggests that the evidence is equally valid for all four. Professor Sollmann still encourages the use of alkali carbonates along with the salicylates, although this is deprecated by most authorities who have worked on the subject. On p. 551, the concentration of alcohol in the blood of drunkards is stated to be sometimes as much as 2½ per cent., an impossible number; it is obviously a misprint for 2½ per mille.

These are, however, trivial blemishes; the Manual is a most successful presentation of the present knowledge of the action of drugs in health and disease, and is a mine of information from which both student and practitioner may draw with benefit and with confidence. We can cordially recommend it to their attention, and wish it a wide circulation in this country as well as in the United States. One feature that will prove of special value to workers on therapeutics in this country is the full treatment of the valuable work done by many clinical and experimental investigators under the American Medical Association and independently. These papers are sometimes difficult to obtain on this side of the Atlantic but they have justice done them by the author. The more important preparations of the United States and the British pharmacopœias are discussed, and some of those of the various pharmaceutical commentaries. A very useful bibliography extending to nearly 60 pages is appended. The directions for practical laboratory work for students, which formed a feature of the first edition, is omitted in this one, but is promised in the form of a separate volume.

Malingering and Feigned Sickness, with Notes on the Workmen's Compensation Act, 1906, and Compensation for Injury, including the Leading Cases Thereon. By Sir JOHN COLLIE, M.D Aberd., J.P., Physician, Hospital for Epilepsy and Paralysis, Maida Vale; Honorary and Temporary Lieutenant-Colonel, R.A.M.C., &c. Illustrated. Second edition, revised and enlarged. 1917. London: Edward Arnold. Pp. 680. Price 16*s.* net.

THE first edition of Sir John Collie's useful and practical work on "Feigned Sickness" was published in 1913, and he mentions in his preface to the second that "much of the leisure time of four years has been spent in amplifying and bringing it up to date."

The war is naturally responsible for a new chapter on "Military Malingering," but the additions deal chiefly with phases of the main subject more closely connected with industrial and social conditions in normal times. Chapters have been added upon self-inflicted injuries, upon malingering in connexion with skin affections, miner's nystagmus glycosuria and incontinence of urine, upon the Workmen's Compensation Act, 1906, and scheduled diseases, "return to work," the effect of recent legislation upon sickness and accident claims, suppuration and its prevention, immobility after joint injury, rheumatism and fibrositis and their relationship to accident, and upon the ligaments and muscles of the back. Many illustrations have also been added. The quite valuable chapter upon "Return to Work" explains and discusses the drawbacks which accompany the advantages attending the invitation issued frequently by employers to injured workmen to resume their duties on full wages which, in fact, they are not capable of earning. The author's observations on the policy of workmen's compensation and its administration are well worth the consideration of employed, employers, and their legal advisers.

Sir John Collie seems to be as well conversant with the legal as with the medical side of his subject. We may call special attention to the chapter on the conduct and position of medical witnesses, which will be found among those towards the end of the volume which deal with more or less legal matters, for it contains information which anyone expecting to be called as a medical witness might read with advantage. We have here a brief summary of the question of such a witness's privilege, together with sound advice upon the manner in which the witness should prepare for his task and comport himself when fulfilling it. Some of the author's maxims upon conduct in the witness-box are amusingly precise, but his instruction to "Watch the judge's pen" would have had to be qualified a few years ago by the exception "unless it be Sir Fitz James Stephen," for that distinguished but sometimes rather peremptory judge used to declare himself disconcerted by a witness who timed his replies by observing when his lordship's notes were completed. There may be others even now whose nerves are similarly affected, though they be less emphatic in their admission of their peculiarity. That a witness should be "exact, lucid, and succinct" is, of course, desirable, whether he be a medical man or not, and Sir John Collie's writing forms a good example of these virtues. The second edition of his work amplifies the information in the first, and deals satisfactorily with a subject of growing importance and with a large literature accumulating round it. It can safely be recommended to medical men concerned with the examination of persons whose interest it is to feign or to exaggerate symptoms of disease, and we may add the hope that it will not be introduced too liberally into those free libraries in which, it is said, the malingerer is able to train himself to play his part.

Insanity in Everyday Practice By E. G. YOUNGER, M.D Brux., M.R.C.P. Lond. Fourth edition. London: Baillière, Tindall, and Cox 1917 Pp. 134. Price 5*s* net.

IN this new edition Dr. Younger has added brief notes on neurasthenia as seen during the present war, and on the modern cult of psycho-analysis. The latter, whatever its psychological interest, he finds unlikely to be of assistance in cases of insanity met with in general practice.

The Treatment of Diabetes Mellitus. With Observations upon the Disease based upon Thirteen Hundred Cases. By ELLIOTT P. JOSLIN, M.D. Harv., M.A. Yale, Assistant Professor of Medicine, Harvard Medical School, &c. Second edition, enlarged and thoroughly revised. Illustrated. Philadelphia and New York: Lea and Febiger. 1917. Pp. 559. Price $4.50.

IN recent years the study of metabolism has been vigorously prosecuted in the United States of America, and the research work that has been done there has contributed largely to our present knowledge of the subject. Among other problems that have attracted attention and been attacked with a considerable degree of success are those relating to the disturbances in the chemistry of the body met with in diabetes mellitus. Although the essential causes of the condition are as yet obscure, sufficient new information has been obtained radically to alter many of our previous conceptions of the disease and its complications, with resulting changes in their treatment. This state of things has been contributed to by a number of observers, most of whom have been enabled to carry on their work through the far-sighted generosity of wealthy Americans who have founded laboratories where research can be carried on under ideal conditions of endowment and equipment, but the improvement in the immediate outlook of patients suffering from diabetes is largely owing to the painstaking researches of Dr. F. M. Allen, of the Rockefeller Institute of Medical Research, who demonstrated first on animals and subsequently on man the increase in carbohydrate tolerance that may be brought about by prolonged fasting and regulated physical exercise in the diabetic condition. Since Allen published his results in 1913 a number of text-books dealing with this method of treating diabetes have appeared, but in none of them has it been so thoroughly and authoritatively dealt with as in that written by Dr. E. P. Joslin, assistant professor of medicine at Harvard. The first edition of Dr. Joslin's book, appearing in 1916, was quickly exhausted, and is now followed by a second, which has been enlarged and largely rewritten. In the additional 120 pages or more of the new edition questions raised by doctors and patients since the previous publication are dealt with, and a large amount of fresh material has been introduced. The further experience gained in the treatment of 300 additional cases has been made use of and enabled the author to give a more definite description of the treatment he finds most successful, besides showing in what respects it has been found advisable to deviate from the plan, based upon Allen's original experiments, previously followed.

The most notable innovations in this edition are the new teaching with regard to the treatment of acid intoxication and the limitation of the initial fasting period. Dr. Joslin now condems the use of sodium bicarbonate to combat acidosis, holding that the dangers attendant upon the employment of this or any other alkali far outweigh their advantages even in impending coma. Instead he would prevent the development of acid poisoning by controlling the fat in the diet from which the acid bodies are mainly derived; this he considers is safer, easier, and more agreeable for the patient. As it is not the fat itself that is harmful but the suddenness with which the ratio of fat to carbohydrate in the diet is changed, any alteration must be gradual, bearing in mind that an excess of carbohydrate is often less harmful to a diabetic than fat with little or no carbohydrate to promote its utilisation. In order to prevent the appearance of acidosis during fasting, and to control it when present, great care is advised in preparing the patient for the withdrawal of food. As a first step fats should be omitted from the ordinary diet; a couple of days later the proteins are dropped; next the carbohydrate is halved until only 10 grammes are being taken, and not until then is the fast commenced. When the urine has been rendered sugar-free the precautions against acid poisoning are continued by increasing the diet in the reverse order, commencing with carbohydrates, passing to proteins, and finally adding fat, to which the patient must be gradually accustomed, for "although fat forms the chief constituent of a diabetic's diet he must not be poisoned with it." Considerable stress is laid, too, upon the importance of a sufficient quantity of liquid being taken, especially liquids containing salts, such as broths and mineral waters, by patients during the fasting period and when acid intoxication assumes threatening proportions. Dr. Joslin maintains that the exclusion of salt from the diet of a severe diabetic hastens coma and that occasionally a case of coma may be rescued by the free use of salt. Since these principles have been adopted the proportion of deaths from coma has fallen from 64 per cent. for the 18 years ending Dec. 18th, 1915, to 44 per cent. for the year 1916. It is important to note, however, that a new cause of death has made its appearance in Dr. Joslin's statistics, three patients having succumbed to inanition. It is probably in part owing to this that he has discontinued the long fasts, originally advised by Allen, that are occasionally necessary to free the urine from sugar at the first trial, and now limits the initial fast to four days. If glycosuria persists at the end of that time a system of intermittent fasting is employed, periods of abstinence from food of diminishing length being interspersed between periods when a limited diet is allowed. It is stated that with this plan no uncomplicated case has failed to become sugar-free and the expectation of life has been prolonged. Formerly the first year after the discovery of diabetes proved to be the most dangerous, 68 per cent. of deaths occurring in that period, but now the mortality has fallen to 17 per cent. for the first year, and the second has come to be the most dangerous.

In his enthusiasm for a new method Dr. Joslin does not forget that in the past good results were obtained with the majority of diabetics without systematic fasting, and that gradual restriction of the carbohydrate intake was the means generally employed. When this is combined with careful limitation of the protein and fat allowance even better results are secured and actual fasting often becomes unnecessary. It is chiefly in the management of long-standing, complicated, obese, elderly, and severe cases that he finds Allen's method has simplified the treatment and proved of greatest service, but even here it must be used with discretion and understanding. Fasting resembles in its action the drugs morphine and digitalis; they frequently give surprisingly good results even when carelessly employed, but they often do harm, and their true worth can only be recognised when they are prescribed with intelligence. It should always be borne in mind that when a patient's strength has been diminished by fasting an incorrectly balanced diet will sooner or later cause a return of the glycosuria with increasing acidosis, and that the last stage of the case will then be worse than the first. It is comparatively easy to get the urine of a diabetic free from sugar, but to keep him so, and in good health, is much more difficult. The determination of the carbohydrate tolerance is only a small part of the problem; the fats and proteins must also be given in proper amounts, and the patient must be educated to carry out his diet with understanding, while appropriate changes in the food allowance must be made from time to time to meet changing circumstances. The sooner the treatment is started the more thoroughly it is carried out; and the more completely the patient understands the principles on which it is based the better will be the results. So impressed is Dr. Joslin with the importance of early diagnosis that he would advise everyone to have the urine examined at least once a year on some fixed day, such as a birthday.

It is claimed that one of the great advantages of the fasting treatment is its simplicity, complicated analyses of the urine, blood, &c., being rendered unnecessary, and we have it on Dr. Joslin's own authority that he keeps his laboratory records on slips six and a quarter by one and one-sixth inches, "so as not to impress the patients with awe." In mild cases simple qualitative and quantitative methods are no doubt sufficient to allow of satisfactory regulation of the treatment, but we cannot agree that it is true in severe cases where secondary disturbances of metabolism have occurred and where the utilisation of protein and fat, as well as carbohydrate, is seriously at fault. The problem is then too complicated to be solved by the imperfect data afforded by such analyses or by any rule-of-thumb procedure. The interests of the patient demand that all the information to be secured by a complete investigation of his defective metabolism by every method known to modern science should be employed and to withhold even part, simply because it involves a considerable amount of laborious work, cannot be good treatment, although it may make it easier for the physician. It is possibly owing to the fact that Dr. Joslin considers more than simple methods of analysis of the urine now unnecessary that the section of his book dealing

with the chemistry of the urine is the least satisfactory part of it. To mention only one example, we should have thought that, even in a book entitled "The Treatment of Diabetes Mellitus," a more adequate account of the reducing substances other than dextrose met with in the urine would have been desirable than is given in the page and a half devoted to the subject, for in addition to the question of differential diagnosis it is surely worth considering whether their presence calls for some particular treatment. It is now generally recognised that analyses of the urine should be controlled by examinations of the blood and respiration as much as possible, and that the aim of our treatment should be not only a sugar-free urine, but also a normal sugar and lipoid content of the blood with a normal carbon dioxide tension of the alveolar air. A thorough account of the modern methods employed in these estimations is given by Dr. Joslin, who devotes nearly 40 pages to their consideration. He emphasises the importance of exercise in reducing hyperglycæmia, and points out that Allen has shown that a single fast-day with exercise may reduce the blood-sugar as much as several fast-days without exercise, while his clinical experience indicates that patients retain their strength and appearance better during fasting when moderate exercise is taken than when they are allowed to remain in bed.

In agreement with most modern writers on diabetes Dr. Joslin is averse from the routine employment of drugs, especially those that are supposed to control the excretion of sugar, and states that in his experience those who use drugs most examine the urine quantitatively the least. The administration of medicines to control the glycosuria can only be regarded as a confession that a proper diet has not been prescribed and that the confidence of the patient has not been secured. His rule is to wait at least a year before prescribing any drug. Since diet is the keystone of treatment, it is necessary that every physician who undertakes the care of a case of diabetes should make himself thoroughly acquainted with the composition of the food materials that are commonly used. For that purpose the information and tables given in this book will be found of great service, for they include the standard analyses of American foods compiled by Atwater and Bryant and also figures abstracted from the special reports on so-called diabetic foods made by Street for the agricultural experiment station of New Haven. With regard to these analyses of "diabetic" foods it should be noted that although some of them contain only a very small percentage of carbohydrate their protein content is almost invariably high and that they are therefore capable of furnishing a large amount of sugar. Failure to recognise this fact, and the fraudulent character of many of the most widely advertised bread substitutes have been two of the commonest causes of failure in the treatment of many cases of diabetes in the past. Their use should be discouraged, at any rate at the beginning of treatment, and if they are allowed later they should be employed for one, or both, of two definite purposes: (1) As an aid in determining carbohydrate tolerance; (2) when the tolerance has been learnt, as a food containing a reduced amount of carbohydrate. In either case it is essential that their exact composition should be known and that they should not be prescribed indiscriminately but in definite amounts. Dr. Joslin considers that no patient should be allowed to become dependent upon special diabetic foods; they are expensive, are sometimes unobtainable, always make him conspicuous, and may eventually become so nauseous that it is difficult to adhere to a diet containing them. One of the great merits of modern methods of treating diabetes is that the use of special foods is unnecessary, for by a quantitative regulation of the diet such as is now generally employed most diabetics are able to take ordinary foodstuffs in sufficient amounts to meet their requirements and yet avoid glycosuria. The untreated diabetic is a food spendthrift, and, according to Dr. Joslin, the food he wastes in a week may be sufficient to feed a soldier for a year, a matter of no small importance at the present time. The prevention of this waste is largely in the hands of the medical profession, as the elimination of unutilised sugar in the urine by most diabetics can be avoided by early diagnosis, prompt treatment, and suitable education of the patient.

To those who wish to make themselves familiar with Allen's method, so as to give their patients the benefit of the most recent developments, we can thoroughly recommend this book, which is dedicated to the "Medical Profession of the United States of America and her Allies, upon whom devolves the *training* of their million diabetics." It bears the stamp of wide clinical experience, combined with scientific knowledge, and presents in an eminently readable manner a subject full of difficulties and pitfalls for the unwary.

LIBRARY TABLE.

Practical Guide to Diseases of the Throat, Nose, and Ear, for Senior Students and Junior Practitioners. By WILLIAM LAMB, M.D Edin., M.R.C.P. Lond. Fourth edition. London: Baillière, Tindall, and Cox. 1917. Pp. 372. Price 8*s.* 6*d.* net.—This helpful guide to the beginner has been revised and brought up to date for its new issue after three years. The author has contented himself with filling up various small lacunæ without adding materially to the size of the book, which will be found, as before, to fulfil its modest purpose admirably.

Electro-Therapeutics for Military Hospitals. By WILFRID GARTON, M.R.C.S., L.R.C.P. Lond., Temporary Captain, R.A.M.C. London: H. K. Lewis. 1917. Pp. viii. + 48. Price 2*s.* 6*d.* net.—This small monograph consists essentially in a plea for the more general use of electrical applications in the many disabilities brought about in the course of the present war. While the author is right in his contention that electro-therapeutics have not received full employment, there is nevertheless much cause for gratification in the enormous development of the use of these methods since the war began. We have only to visit one of the many general military hospitals, or more particularly one of the several orthopædic hospitals, to see how much electrical treatment is now relied upon to alleviate and cure the results left by wounds and disease. The author tells us nothing that is new to those who specialise in this line of work, but his book will be of help to those who have to carry out electro-therapeutics, especially in military hospitals.

Sanitary Law and Practice: A Handbook for Students of Public Health and Others. By W. ROBERTSON, M.D. Glasg., and CHARLES PORTER, M.D. Edin. Fourth edition. London: The Sanitary Publishing Co., Ltd. 1917. Pp. 750. Price 12*s.* 6*d.* net.—The stasis in health legislation has necessitated little alteration in the text of this handbook since its last appearance five years ago, and 20 pages of appendices suffice for the summary of recent Acts and regulations. The handbook facilitates a study of the heterogeneous mass of conflicting data which constitutes our present sanitary code as far as such help is possible, but we sincerely trust that by the time the next edition is called for the whole precarious edifice may have been bonded together by a Ministry of Health into a single consistent structure. We doubt not that the authors will welcome this addition to their labours.

Easy Italian and How to Pronounce It. By Captain KEYWORTH. Third edition. Hove: Combridges. Price 3*d.*—In this little book Captain Keyworth puts out in conversational form the phrases that would be most useful to the stranger, especially the soldier, who found himself in Italy in circumstances where a little knowledge of the language was made necessary by his circumstances. The questions necessary to find a locality or a route, to obtain food, drink, lodging, or clothing, to obtain a date or reach a hospital or a doctor, are simply set out in English and Italian, and in the latter language they are spelt out phonetically. A few military terms are given, and, to meet the exigencies of the wounded in particular, the Italian terms for the parts of the body are included.

L'Exploration Radiologique des Voies Urinaires. By le Dr. ARCELIN, Chef de Service de Radiologie à l'Hôpital Saint-Joseph et à l'Hôpital Saint-Luc. Paris: Masson et Cie. 1917. Pp. 175. Price 6 francs.—This work is one of special appeal to all those who are more or less directly interested in the X ray examination of the urinary system, comprising as it does all the latest ideas of the French school on this very important subject. The work is so written that it will be of value to the physician and the surgeon as well as to the radiologist, and each will find detailed information on almost any phase of the subject in which he is more particularly interested. The illustrations and diagrams leave nothing to be desired, and a very valuable chapter is devoted to the localisation of projectiles in the vicinity of the urinary organs.

BOOKS FOR NURSES.

OF late years there has been no lack of useful books written to aid nurses during their training and afford means of reference afterwards. Indeed, the choice for the nurse, as for the medical student, is at times bewildering. Among the more ambitious of the books before us is *A Complete System of Nursing* (London: J. M. Dent and Sons. 1917. Pp. 746. Price 10*s*. 6*d*. net), by Miss A. MILLICENT ASHDOWN, examiner in nurses' practical work to Guy's Hospital, who has based her system on that of the late Miss Honnor Morten, while rewriting the text entirely. In this the nurse is instructed how to carry out any and every of her multifarious duties, chapters dealing in succession with medical, surgical, and special nursing. Poisons, diets, weights and measures, and useful tables are given in later sections.—Anatomy and physiology omitted from this work are admirably dealt with by Dr. Percy M. Dawson, assistant professor of physiology at Wisconsin, in *Elements of Anatomy and Physiology for Nurses* (New York: The Macmillan Company. 1917. Pp. 279. Price 7*s*. 6*d*. net), which is well calculated to interest the reader in what too often are regarded as mere lessons.—Two other books published by G. P. Putnam's Sons also deal with subjects preliminary to clinical work: in a *Text-book of Materia Medica for Nurses* (Fourth edition. 1916. Pp. 243.) Miss LAVINIA DOCK deals concisely with the characters of drugs, inorganic and organic, and the main points of their action and uses. In *Physics and Chemistry for Nurses* (1916. Pp. 444 Price 7*s*. 6*d*.) Miss AMY E. POPE, who has already written much for nurses, has collected a large amount of useful information imparted in an interesting manner, but the value of the book as a whole is marred by very unequal treatment.—Dr. H. S. RUTHERFORD DARLING, Assistant Surgeon to the South Sydney Hospital, may be read with profit in his *Surgical Nursing and After-Treatment* (London: J. and A. Churchill. 1917. Pp. 582 Price 8*s*. 6*d*. net) by others than nurses. His book really includes a treatise on minor surgical ailments and the measures required to deal with them. In an *Elementary Hygiene for Nurses* (London: J. and A. Churchill. 1917. Pp 152. Price 3*s*. net) Dr. Darling has succeeded within small compass in giving an excellent and comprehensive sketch of preventive medicine in its various branches, and this work also may be read with profit by medical students and practitioners as well as by the nurses, for whose final examination at the Australian Trained Nurses' Association it was written.—Dr. CHALMERS WATSON, in *Lectures on Medicine: a Handbook for Nurses* (Edinburgh: E. and S. Livingstone. 1917. Pp. 295. Price 4*s*. 6*d*. net), puts in practice his belief of the desirability of grounding nurses more thoroughly in medicine than is usually done. His method of instruction cannot fail to interest.—Dr. J. K. WATSON, in a book written "more especially for nurses and midwives," sets out *The Venereal Diseases Problem* (London: Baillière, Tindall, and Cox. 1917. Pp 54. Price 2*s*. 6*d*. net) in a manner that will conduce towards the needed enlightenment.—Finally, in *A Text-book of War Nursing* (London: G. P. Putnam's Sons. 1917. Pp. 227. Price 3*s*. 6*d*.) Miss VIOLETTA THURSTAN writes from her personal experience of nursing under war conditions in Belgium, Russia, and France, for the help of sisters and nurses working in military hospitals.

JOURNALS.

The Indian Journal of Medical Research. Vol. V., No 1.—This number contains 15 separate articles and extends to 272 pages, along with many plates. Major E. D. W. Greig contributes three papers, in two of which he continues his valuable Bacteriological Studies of Cholera-like Vibrios Isolated from the Stools of Cholera Cases in Calcutta, one paper dealing with morphological and cultural investigations and the other with feeding experiments on rabbits. He thinks that as finer methods of technique are evolved it may be possible to establish further and more definite differences in morphological and cultural characteristics between cholera-like vibrios themselves and between this class and the standard cholera vibrio. From the feeding experiments he found that some strains produce only slight illness, while others cause rapidly fatal results. This observation probably helps to explain the known variation in the severity of epidemics and individual cases of cholera. Major Greig's third paper consists of some observations on the effect of intravenous injections of antimonium tartaratum on malarial parasites. He found that the injection intravenously of this preparation of antimony entirely failed to destroy the malignant tertian crescents or rings; also that the rings and gametes of the benign tertian parasite were unaffected by the antimony.—A joint paper is furnished by Major J. Cunningham, Major H. C. Brown, and Dr. K. R. E. Iyengar, of the Central Research Institute, Kasauli, on the preparation of vaccines on a large scale. Their inquiry was undertaken in view of the greatly increased demand for vaccines of different kinds, both for the armies in the field and for the drafts which are constantly being sent as reinforcements.—Major J. Cunningham, in conjunction with Captain H. H. King, in continuance of previous work on the subject, supplies a description of further investigations on dysentery in the jails of Eastern Bengal, being the report on a special inquiry conducted under the auspices of the Indian Research Fund Association and dealing largely with the bacteriology of dysentery organisms.—The Susceptibility of Indian Milch Cattle to Tuberculosis is the subject of a most interesting paper by Major W. Glen Liston and Dr. M. B. Soparkar, with many illustrations. Their investigations confirm the general experience that Indian cattle are less commonly affected by tuberculosis than English cattle, and support the view that the comparative infrequency of the disease among cattle in India is due to a natural resistance rather than to any method of housing or keeping of cattle in India. Incidentally, the investigations shed some light on the practical absence of tuberculosis caused by the bovine type of bacillus in children and adults in India. This latter part of the subject is to be discussed by the authors in a subsequent communication.—Lieutenant-Colonel W. D. Sutherland, Imperial serologist, Calcutta, writes critically on "the Wassermann reaction as explained by Major Nesfield."—A joint paper by Lieutenant-Colonel J. W. Cornwall and Assistant Surgeon T. Kesava Menon, on the possibility of the transmission of plague by bed-bugs, has already been commented upon in our issue of Dec. 1st.—Mr. P. R. Awati, medical entomologist, Indian Research Fund Association, gives a further instalment of his Studies in Flies, discussing this time the classification of the genus *Musca* and giving a description of the Indian species, with numerous illustrative plates.—Two papers are contributed by Captain J. A. Sinton, the first on a trematode parasite of anopheline mosquitoes and the second on the anopheline mosquitoes of Kohat.—Lieutenant-Colonel Clayton Lane writes on Ankylostoma *Duodenale* as a parasite of *Felis tigris*, and Dr. G. C. Chatterjee, assistant professor of pathology, Calcutta, describes a trichomastix, parasitic in the human intestine. As this has not hitherto been described, he feels justified in regarding it as a new species, to which he gives the name of *Trichomastix hominis*.—*Tricophyton Viannai* (n. sp.), the infecting agent in a case of dermatomycosis, is described by Captain Froilano de Mello, director of the bacteriological laboratory, Nova Goa (Portuguese India), with numerous illustrations. The parasite in question was probably of African origin and was most likely derived from some animal.—The problem of the amœbic dysentery carrier in India and Mesopotamia is discussed by Temporary Captain W. MacAdam, R.A.M.C., and Assistant-Surgeon R. Keelan, I.S.M.D.

Maternity and Child Welfare. Vol. I., No. 11. November. 1917. Price 6*d*. net.—The successful child-welfare worker has a passion for detail of a concrete and practical kind, and this taste is admirably catered for in Miss Grace Owen's "The Nursery School" and in the articles on Infant Welfare Centres, by Dr. Sylvester Richmond and Miss Lilian Seth-Smith. The importance of applying the results of medical research and scientific discovery in public health work is insisted on in this number and both "The Problem of Nursing in Rural Districts," by Mrs Oliver Bellasis, and "A Scheme for the Betterment of Conditions of District Midwifery Practice," by Miss Alice S. Gregory, illustrate the practical difficulties of the task. If the public, especially the poorer section, is to have the full benefit of the results of medical research, skilled nursing for all in illness and for women in childbirth is indispensable; the ignorant and unskilled cannot carry out doctors' orders. Similarly, constructive and preventive work, such as town-planning, health visiting infant-welfare work are hampered because the connecting link is too often lacking—the link which would serve to coördinate the various efforts and keep them all in touch with enlightened scientific thought. Of course, this all points one way, to the need for the central authority which would coördinate separated effort.

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LITERATURE, &c., ON APPLICATION.

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THE LANCET.

LONDON: SATURDAY, DECEMBER 22, 1917.

The Belgian Doctors' and Pharmacists' Relief Fund: The Second Appeal.[1]

WE publish this week a letter from the honorary officers and Executive Committee of the Belgian Doctors' and Pharmacists' Relief Fund, begging the immediate support of a further appeal for help. The letter merits the serious consideration it surely will receive from those to whom it is addressed; indeed, the signatories make out an unanswerable case for continued aid in their brief summary of their previous actions. At the close of 1914 the Fund was started by an appeal emanating from a committee fully representative of the medical and pharmaceutical professions in Great Britain and Ireland, and as a result about £20,000 were received almost entirely from members of those professions, the colonial and Indian share in this work of charity being nobly marked. *No further appeal has been issued*, but an Executive Committee for distribution purposes was appointed, and lists of the subscriptions, published regularly in the professional journals, were trusted to form a cogent reminder of the existence alike of the bitter need of the Belgian doctors and pharmacists, and of the methods of aid adopted. The money thus raised has in the course of three years been spent, first in relieving distress among the members of the medical and pharmaceutical professions, being Belgians, who had taken shelter in this country, often accompanied by considerable family circles; and, secondly, in helping to save from slow starvation those of our Belgian colleagues who, having remained at home, have been plunged into untold misery by the German savagery and usurpation. Latterly the proceeds of the Fund have been expended almost entirely in Belgium, care having been taken that the sums transmitted monthly should find their way into the hands of a competent professional committee in Brussels. The Executive Committee now state that only for one more month can these mensualities be continued. Economy has been unable to husband the sum collected in 1914 and 1915 for any longer time, though the administration expenses of the Fund have been practically nil. The definite position has been reached now that either the second appeal must be successful or the work must stop.

The difficulty of raising further and large sums of money from the medical and pharmaceutical professions in this country at the present moment is only too painfully clear. The two professions contain no very great number of persons, and many of these are undergoing through the war a disastrous decrease in income, while all of them are subjected, of course, to the impoverishing circumstances of raised prices and heavy taxation. We may be certain that these facts are well known to the Executive Committee of the Fund, who saw that their resources would suffice, on the scale of distribution adopted, until the end of this year, by which time it was hoped that the end of the struggle would be arriving. When this hope disappeared it was decided that a further appeal ought to be made, and at that juncture a letter reached Dr. H. A. DES VŒUX, honorary treasurer of the Fund, from Mr. W. B. POLAND, the Director for Europe of the Commission for Relief in Belgium, which made any other course absolutely unthinkable. We quote from that letter here, despite the fact that it appears elsewhere in full, because it is in itself, and without the added evidence of good management on the part of the Fund, a justification for the action of the Executive Committee in appealing immediately for renewed support. Mr. POLAND, emphasising the claim that Belgium has upon all her friends in the outside world who are trying to relieve her continually increasing distress, says:—

"The most difficult class to reach is the very class that your Fund in the past has ministered unto—namely, the families of the doctors and pharmacists who may not dig, to beg they are ashamed. If the supporters of your Fund knew how much actual suffering they had allayed, and how much potential moral and physical suffering they had prevented, they would not cease to continue their support, many as are the claims now made upon them. ..... The people who receive your kindness and charity are grateful in the extreme. Wave after wave of gratitude sweeps over the country. Some day you will know of it. ..... The funds from your society are paid over to a commission of eminent gentlemen of your profession and the distribution is under their personal supervision. The knowledge that their associates in England have not forgotten them is an inspiration to the whole profession at a time when moral support is perhaps as much needed even as food."

One practical answer only is possible to such a communication. The Executive Committee of the Belgian Doctors' and Pharmacists' Relief Fund must proceed to collect money for our Belgian colleagues suffering the tortures of want nigh to starvation, and of humiliation akin to shameful death. We know the needs of our own people, the needs that are present and those that are to come; and we should deplore anything that might detract from the chances of hearty support to such a movement as that now in progress in behalf of the War Emergency Fund of the Royal Medical Benevolent Fund. With the organised endeavour of the British Medical Association to support that Fund we have every sympathy, as we have endeavoured to show in another column. As far as lies in our power, we have helped, and will help, the Royal Medical Benevolent Fund in its great object. But at the same time, and at the worst of times for collecting money, we press on our readers the appeal for our Belgian colleagues.

[1] See p. 943.

Poor though this country may be under the stress of recent events, we are boundlessly rich in comparison with enslaved Belgium; and we have every confidence that once again the medical and pharmaceutical professions of Great Britain and Ireland will come to the assistance of the Belgian Doctors' and Pharmacists' Relief Fund.

Annotations.

"Ne quid nimis."

ELIZABETH GARRETT ANDERSON: PIONEER.

THE death of Dr. Elizabeth Garrett Anderson at the ripe old age of 81 years ends a career conterminous with the entrance of women into the medical profession. Elizabeth Garrett was the first woman to obtain a registrable medical qualification in this country, and although on the advice of the Attorney-General the Royal College of Physicians of London at the time "courteously declined" to admit her for examination or to grant her a licence to practise physic, she was able to obtain a high medical qualification at the University of Paris after having been through the ordeal of an anatomical dissection held in public by Professor Broca and his colleagues. Such courage and persistence could not fail of its reward. THE LANCET was among those who recognised at the time that Miss Garrett had "surmounted the great difficulties which surround the attainment of a complete method of education for women with singular energy and perseverance, at great cost, and after long years of arduous labour." The opening of a dispensary for women and children where she could put her attainments into useful practice followed as a matter of course, since the management of no public charity would at that time have ventured to offer her a staff position. Her return four years later by an overwhelming majority as a member of the Marylebone Division of the Metropolitan Education Board confirmed her public position. Controversy about women doctors was set aside to enable the appearance on the School Board of one whose warm sympathy for school-children was combined with a practical knowledge of the means for their physical and mental elevation. To the present generation the prejudices of the early "seventies" may well seem to belong to a different world altogether; but the revolution in outlook has occurred within the span of a single life-time, and Mrs. Garrett Anderson's work was the first stage in that medical emancipation of women, whose far-reaching effect is seen in the work of medical women in the present emergency. Not least seen in the war hospital under the command of Elizabeth Garrett Anderson's daughter, which is run exclusively by medical women and orderlies.

THE INFECTIOUSNESS OF TRENCH FEVER.

ALTHOUGH neither the infecting organism nor the method of conveying infection has been finally settled in the case of trench fever, suspicion centres increasingly round the louse, and thus it comes to be regarded as possible that soldiers arriving home from the Front with infected lice upon them may convey the disease to other members of their household. Information on this point is very desirable, and the small committee dealing with the study of trench fever at the Royal Army Medical College would be glad to know of any cases coming under the personal observation of our readers. We may well recall in this connexion that in Professor G. H. F. Nuttall's exhaustive study of the louse in the November number of *Parasitology*, it is stated that under favourable circumstances lice may even be distributed by the wind. V. Schilling first made the observation in 1916, and it has since been confirmed by other observers, one of whom narrates that after some unpleasant experience he made it a habit of examining lousy men while standing to windward of them. Information may be sent to Surgeon-General Sir David Bruce at the Royal Army Medical College, Grosvenor-road, London, S.W. 1.

THE CHRISTMAS CALORIE.

THE will to make Christmas a time of cheer in spite of calorific limitations will be a capital accompaniment to the national appeal to husband our resources. In the knowledge that the observance of a restricted dietary is furthering the great and high aims of the nation, the season should still be made a joyous one; aware that self-denial means a step to victory the nation will pass through the customary festive occasion with light diet but stout heart. It is quite certain that, as the suggested allowances stand, no harm, and most likely good, will accrue to the health of the community generally by keeping their bodily needs just within physiological bounds. Festive occasions celebrated by hearty feeding and drinking do not, as a rule, leave the individual in a higher state of health. There is nothing at all in the public health returns to show that any deterioration in the health of the public is taking place as a result of food restriction. The immediate future does not augur well for increased supplies, and therefore it would be a splendid patriotic effort if this year the great Christmas festival were allowed to pass as a day of determined sobriety and sacrifice. It is to be remembered also that to a large number Christmas-time means some days of rest from toil, and the sedentary life calls for a smaller requirement of food than the restless, active one. There is at that time less call for repair. The nation might well regard the season as a few days off from routine, which give a relief to taxed energies and therefore diminish the call for high calorific values.

SMALL CUTANEOUS ANEURYSMS AS A SIGN OF PREMATURE SENILITY.

IT is not uncommon to notice in elderly people the more or less insidious appearance on the skin of punctiform hæmorrhages, scattered irregularly or with a confluent tendency, and sometimes associated with small angiectases, particularly in situations most prone to impeded circulation, such as the legs. The changes in the arterial system and alteration in the condition of the skin in advancing age are well known, but hitherto few observers have drawn attention to the possibilities of changes in the walls of the cutaneous arteries. Professor Arullani,[1] of the University of Turin, has made some interesting histological researches on the skin of persons prematurely old from physical or intellectual overwork, progressive toxic diseases and various cachexiæ, and describes marked and constant changes both in the superficial and deeper layers. Apart from the dilated capillaries which are scattered at wide intervals on the surface, he found various degrees of dilatation in the lumen of

[1] Il Morgagni, Part I., Sept. 30th, 1917.

the arteries in the hypoderm, and noticeable damage of their coats, principally of the tunica media. These arteriole dilatations took the form of round, elliptical, or irregular swellings, with thickened walls and empty of blood contents. As a rule there was a direct relation between the dilatation of the vascular lumen and the changes in the parietes which were more noticeable in the larger dilatations, and involved all three coats. According to Professor Arullani, there can be no doubt that the formation of these small aneurysms explains the easy rupture of the arterial walls and the consequent cutaneous extravasation of blood, or, in other words, the pathology of the so-called "purpura senilis." Since the histological investigations were carried out in 12 patients who had no appreciable signs of sclerosis in the larger vessels, the presence of these cutaneous aneurysms constitute an early sign in the picture of the syndrome of arterio-sclerosis, and is of practical importance in the early treatment of that condition. A biopsy may thus throw considerable light from the point of view of an early diagnosis, and entails no more discomfort than many other clinical methods such as blood examinations. The result may be the inducing of prudence in the use of drugs which have a cardiokinetic action not only in the old but in those who are prematurely senile.

SYPHILIS AND HEART DISEASE.

AT a recent meeting of the Académie de Médecine of Paris Professor Gaucher claimed for syphilis a greater part in the production of cardiac disease than is generally admitted. He considered that lesions of the orifice and of the origin of the aorta were frequently syphilitic. Indeed, he asserted that all aortic lesions which are not consecutive to rheumatic endocarditis are syphilitic. In some cases aortic lesions are found in patients with only vague rheumatic antecedents and who are subject to pains which are called "rheumatic." But when such patients are carefully examined slight signs of tabes, particularly loss of knee-jerks, may be found. Moreover, the coexistence of marked tabes and aortic lesions is not very rare. Professor Gaucher further referred to the subjects of aortic disease who are liable to sudden death, not merely those with marked lesions, but those who show only a little dilatation of the aorta and an accentuated second sound. These signs, he thought, were often misunderstood, and many persons who died suddenly from apoplexia had old syphilitic disease of the aorta. Even a certain number of cases of hemiplegia attributed to syphilitic arteritis of the cerebral vessels were due to emboli originating in an unknown or misunderstood aortic lesion. Indeed, he considered sudden death as almost always due to syphilis, whether from the preceding mechanism, perforating myocarditis, or angina pectoris. The coronary arteritis which produces angina pectoris he considered always syphilitic. This was proved by the history, the sero-reaction, and above all by the result of treatment with mercury and iodide, which was often efficacious. Rupture of the heart he regarded as a result of gumma, and lesions of the bundle of His and the permanently slow pulse as also syphilitic. Hypertrophic sclerous myocarditis and the interstitial nephritis which accompanies it were, he thought, in most cases due to syphilis. Professor Gaucher did not report the observations in detail on which he relied to prove these views, but whether they are completely accepted or not they deserve to be widely known because of the frequently beneficial effect of antisyphilitic treatment with mercury and iodide which he has obtained in aortic and myocardial affections, even when there were concomitant arterial lesions, if the renal permeability was assured. Professor Gaucher also claimed that syphilis played a part in the production of mitral disease and related the following case. A man who consulted him for pityriasis of the scalp incidentally mentioned that he had heart disease of rheumatic origin, and had consulted a cardiac specialist, who prescribed digitalin. There was well compensated mitral regurgitation. Professor Gaucher then asked the patient if he had ever had syphilis. He replied that he had had a chancre, but was well treated, and permitted to marry by his doctor and had three healthy children. The knee-jerks were absent. Professor Gaucher prescribed a treatment for which the patient showed so much repugnance that in all probability he did not follow it. Professor Gaucher finally claimed that congenital syphilis played a part in the production of heart disease, and suggested that it should be looked for in cases of obscure origin.

THE WORK OF FOOD INSPECTION IN WAR-TIME.

IN the annual report of the medical officer of the Local Government Board for 1916–17 appears an appendix presenting a report by Dr. A. W. J. MacFadden on the work of inspectors of foods during the year. To carry out the scheme outlined in previous reports for the supervision of food for the Army continues to be the main occupation of the inspectors. In this matter valuable assistance is rendered by the medical officer of health and inspectors of the local authorities concerned, and it is stated that the general improvement in the conditions of food preparation previously recorded has been maintained and where necessary extended. Hygienic standards are enforced with most satisfactory results. Apparently vigilance is called for most over the sausage-making trade, especially amongst the small businesses, where it is necessary to ensure the maintenance of a clean handling of the materials. The supervision of canned meat manufacture is similarly carried out. The question of economising wheat flour in the making of bread and the use of substitutes has also received the practical attention of the department. An observation of considerable importance was made in September, 1916, by the Government laboratory chemist, Sir James Dobbie, who reported to Dr. MacFadden that a sample of phosphate baking powder, which had been sent with a tender for War Office supplies, had been found to contain as much as 32 parts of arsenic per million. It was subsequently found that the firm tendering the sample to the War Office were merely mixers of the various ingredients which enter into the composition of such baking powders. It is common knowledge that these powders have had previously as their acid basis cream of tartar, but owing to the shortage of this material the acid phosphate of calcium has largely come into requisition. Suspicion easily fell upon this agent, and investigation soon cleared up the matter, for all the arsenic found in the baking powder was contained in the acid calcium phosphate used. One sample of "cream of tartar substitute" (unmixed acid calcium phosphate) contained no less than 4½ grains of arsenic per lb., or 643 parts per million. The employment of arsenical sulphuric acid in the making of the acid phosphate

explained the contamination, but the fact that manufacturers knew that the product was arsenical is a most unsatisfactory feature of the case. As Dr. MacFadden points out, whatever extenuating circumstances, such as war-time conditions, might be pleaded for failing to secure a high standard of purity in all the acid phosphate manufactured, nothing can excuse the deliberate addition to an article intended for food purposes of a material known to be contaminated with a dangerous poison. By the activity of the Food and Drugs Acts authorities, however, the firms concerned were promptly made aware of the situation, and many of them had in their possession stocks of contaminated acid phosphate which had been returned to them by manufacturers and vendors of baking powders which had been reported against. An undertaking was eventually obtained that no acid phosphate which had not been analysed and found to conform with the generally recognised standards of purity as regards arsenic would be issued from the factory. The food inspection branch of the medical department at the Local Government Board may be congratulated on the efficient discharge of their duties in this matter, which, if they had not intervened, might well have led to serious consequences to the public.

OPERATIVE TREATMENT OF GANGRENE OF THE LUNG.

THE surgery of the lung is making rapid progress in our generation and no one has done more to advance it than Professor Sauerbruch, of Zurich. At a clinical meeting held on Dec. 4th, at the Cantonal Hospital, he showed a case of extensive gangrene of the lower lobe upon which he had operated a week earlier. The essential points to observe in such an operation are the protection of the pleura by tampons from secondary infection and the removal of large portions of the costal wall in order fully to expose the gangrenous surface and secure good drainage. The results of operative interference in such cases are fairly satisfactory, when it is remembered that a large proportion do not reach the surgeon until their condition is desperate. Sauerbruch lost 13 out of 37 on whom he operated. He also demonstrated a case of gunshot wound in which gangrene of small extent had occurred in the lung from which he therefore removed the bullet with ensuing recovery.

CHLOROFORM ADMINISTRATION.

THE claims of chloroform will probably never be denied so long as general anæsthetics are in use. It has in practice conveniences from its very potency, since this avoids the necessity for large amounts being carried and allows of the utmost simplicity in administration. Yet it is most desirable that convenience should not override the essential consideration of safety, and a few hundred, even a few thousand, successful administrations in private practice must not blind us to the well-proven risks of chloroform. Therefore we sympathise fully with the attitude taken up by the Section of Anæsthetics of the Royal Society of Medicine recently when it condemned the routine use of this drug in military hospitals.[1] Nor could any man who studies the evidence available fail to agree with Colonel J. F. Silk's conclusion. Yet for the many practitioners all over the country who have to give an occasional anæsthetic chloroform remains, and is likely to remain, the most valued standby. It is essential, then, that they should know how to minimise its risks. A correspondent draws our attention to one factor which is, in his opinion, most important. That is slowness in administration. We believe he is correct, provided that the slowness is combined with continuity. There should be no intermission in the inhalation of chloroform vapour once it is begun, and however slowly the administration is advanced, at any rate there must be no intervals in the procedure. It is mainly for this reason, the more easy achievement of continuity, that inhalers such as Junker's or Shipway's provide safer means for carrying on administration than do the simple drop-bottle and mask, although they are not so suitable for the beginning of induction. The question of safety is inseparable from that of the administrator's experience; probably better results accrue when a man accustomed only to chloroform employs chloroform than if such a man were to use a complicated and, to him, novel method of administering a safer drug.

[1] THE LANCET, 1917, ii., 716.

PARATONIC DEFORMATIONS OF THE HAND FOLLOWING ON INJURIES RECEIVED IN WAR.

THE latest number of the *Nouvelle Iconographie de la Salêptrière* contains a useful contribution to the vexed question of reflex paralysis. Professors Laignel-Lavastine and Dr. Paul Courbon have taken a series of 16 cases of arm injury with resulting clinical appearances of a peculiar nature, described originally by Professor Pierre Marie and Dr. Foix as paratonic paralysis. In these cases the familiar signs of a particular nerve lesion are mostly wanting, yet the condition does not conform to the usual varieties of hysterical palsy; it is one of hypotonus rather than paralysis, hypertonus rather than contracture. The attitude of the hand presents a fairly close resemblance to what is known as the accoucheur's hand. As an instance, the case may be taken of a soldier with fracture of the humerus and an incomplete section of the median. The hand was in the accoucheur attitude, with hypertonus in the ulnar group of muscles. The paresis of the median could not explain the hypertonus of the ulnar musculature according to the authors, it might be due to a reflex irritation of the coat of the brachial artery containing sympathetic fibres, at the level of the fracture of the humerus. In their 16 cases they have found motor impairment classifiable in four groups—organic, functional, mechanical, and reflex. In the first group there is no difficulty of interpretation; hypertonus, when it occurs, is due to direct irritation of a particular nerve trunk by the lesion. In the second group the neurologist recognises the familiar signs of hysterical paralysis either functional inactivity or hypertonus in a voluntarily adopted antalgic attitude of defence. The third group is simple enough; fibrous adhesions or cicatricial sclerotic retraction account for the symptoms. As for the fourth group, in the authors' experience it is rare in a pure and uncomplicated form (2 cases out of 16). On the other hand, it is very often associated with defects belonging to the other groups, but that should not lead to its being ignored or overlooked. In regard to the special characters of the physiognomy of the whole series the following points may be noted. The usual mask-like condition is one of combined hypotonus and

hypertonus of reflex origin consecutive to a lesion which does not involve any nerve trunk in a direct fashion. Hypothermy and a degree of cyanosis are the rule. Mechanical hyperexcitability of the involved muscles is commonly found, which is always increased by immersing the limb in running water at 15° C. for half an hour. On the other hand, warming the limb for ten minutes with water above 44° C. makes functional hyperexcitability disappear, but has no effect on true reflex hyperexcitability—an important observation if it is confirmed. The results of electrical examination are not of sufficient precision to be of diagnostic value. Decalcification of the phalanges by osteoporosis is very frequent, but certain observers declare this may occur from mere immobilisation of psychical origin. Sleep makes no difference on the paratonic attitude. Sensibility is as a rule unimpaired except where there is a hypoæsthesia manifestly of hysterical nature. In an ingenious analysis of the symptomatology in relation to the topography of wound and muscles involved, the authors suggest the possibility of inflammation at a distance. They point out that a muscle may be pierced by a foreign body without its tonus being in any way modified, provided the region where tonus is regulated is not implicated. According to the work of Alquier, this area is where muscle fibres and tendinous fibres join, and the authors consider their cases show a concordance between the sites of the lesions and the points of fibrotendinous junction of the muscles which are in hypertonus. Where this concordance is not traceable lymphatic channels may carry inflammation in the particular direction. In other words, it is preferable to think muscularly, as opposed to neurologically, in the consideration of these interesting varieties of impaired function after wounds of the arm, for the mere presence of reflex or organic disturbances is not sufficient justification for assigning all the phenomena to their action.

THE CAUSATION OF SO-CALLED VARICOSE ULCERS.

IN a paper which he read at the London Dermatological Society on Tuesday Dr. R. Prosser White discussed the causation of chronic ulcers of the legs. An analysis of 69 cases attending his clinic during the last five years, at ages varying from 10–67 years, showed that 14 occurred in males and 55 in females. In the 14 male cases he made a diagnosis as follows: syphilis, 6; trauma or sepsis, 3; eczema or psoriasis, 4; tubercle, 1. Varicosity was present in the ratio of 2 to 5. In the 55 female cases the causes assigned were: white swelling, 17; varicosity, 7; the same with a history of burst veins, 3; trauma, 9; eczema, 7; sepsis, 2; syphilis, 5; scald, 1; tubercle, 2; not diagnosed, 2. No less than 17 cases, therefore, gave a history of having suffered after confinement from phlegmasia dolens—a significant proportion when it is borne in mind that this condition occurs only once in every 400 cases of pregnancy. Dr. White concludes that phlegmasia or the secondary streptococcal infection following it are the conditions mainly responsible for the deep intractable ulcerations of women's legs.

THE King has granted unrestricted permission to Miss Lina Mary Potter, L.M.S.S.A., to wear the Insignia of the Fifth Class of the Order of St. Sava, conferred upon her by the King of Serbia in recognition of her services to the Serbian sick and wounded, under the auspices of the Scottish Women's Hospitals for Foreign Service.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND: THE SECOND APPEAL.

TO THE MEDICAL AND PHARMACEUTICAL PROFESSIONS OF GREAT BRITAIN AND IRELAND.

LADIES AND GENTLEMEN,—When at the close of 1914 the terrible plight of our professional colleagues in Belgium, overrun in circumstances of incredible brutality by the Germans, was brought to your notice, you responded generously to an appeal for the immediate creation of a Fund which should deal first with the grave necessities of those who had taken shelter with their families in this country, and secondly with the sufferings of those who remained in Belgium. The appeal of a committee representative of all sections of both professions was kept steadily before you in your professional journals, and the history and progress of the Fund up to February, 1917, which marked the opening of the third year of work, has been published as a pamphlet. This statement showed that by the first week in February, 1915, over £5000 were received, and that by the end of the first year of working £18,570 had reached the treasurer's hands. Further sums afterwards brought the total up to £20,000 by the end of the second year of working. *No appeals for subscriptions were sent out after the movement had been once inaugurated, and now the last financial statement shows that the Fund is practically exhausted.*

Of the value that the Fund has been to those for whom it was created in the directions designated there can be no doubt, and we call your attention to the appended letter from Mr. W. B. Poland, who has had the closest personal experience with the lamentable position of our Belgian colleagues, and who writes movingly of what your practical assistance has done. To us it seems impossible that we should not attempt to continue the work.

The present position, however, is that without further large and prompt subscriptions to the Fund we shall be unable to keep up those substantial monthly subsidies to Belgium to which the money has been mainly devoted. We are fully aware of the burden which the medical and pharmaceutical professions of this country are bearing; we know that several funds which have the highest claims upon our purses are at the present moment seeking, and rightly expecting, widespread assistance; but we none the less urge that the money should be found for carrying on acts of mercy—or rather we should say of bare justice—towards the doctors and pharmacists of Belgium, the little country which with unexampled heroism stood between the German onrush and the civilisation of Western Europe. Of the rightness of our second appeal we know that no doubt can exist, nor of the good that your money has done; while to the manner of the distribution of the Fund we can point with legitimate pride. All our administration has been carried out gratuitously, and the expenses at the end of the first year were only £12 and at the end of the second year only £50. We direct attention in this connexion to the very special wording of the certificate given by Messrs. Crewdson, Youatt and Howard after the examination of the accounts, with the books and vouchers of the Fund before them. This statement is also appended.

We beg, therefore, earnestly for immediate further subscriptions, that the benefits which we have been able to distribute for nearly three years may not suddenly cease at a time when they were never more urgently needed.

The address of the honorary treasurer of the Belgian Doctors' and Pharmacists' Relief Fund is Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W. 1, to whom all subscriptions should be sent. The honorary secretaries are Dr. S Squire Sprigge, THE LANCET Office, 423, Strand, London, W.C. 2, and Mr. W. J. Uglow Woolcock, the Pharmaceutical Society, 17, Bloomsbury-square, London, W.C. 1.

We are, Ladies and Gentlemen, your obedient servants,

RICKMAN J. GODLEE, Chairman,
President of the Royal Society of Medicine; late President of the Royal College of Surgeons of England.

H. A. DES VŒUX, Honorary Treasurer.

S. SQUIRE SPRIGGE, Editor of *The Lancet*. } Hon. Secs.

W. J. UGLOW WOOLCOCK, Secretary and Registrar of the Pharmaceutical Society. } Hon. Secs.

The following are the members of the Executive Committee elected at a meeting in London by a General Committee representing in the fullest way the two professions of Medicine and Pharmacy :—

T. BARLOW,
Late President of the Royal College of Physicians of London.
W. WATSON CHEYNE,
Late President of the Royal College of Surgeons of England.
MEREDITH TOWNSEND,
Representative of the Society of Apothecaries of London on the General Medical Council.
ALFRED PEARCE GOULD,
Late Vice-Chancellor of the University of London.
FREDERICK TAYLOR,
President of the Royal College of Physicians of London.
HERBERT SPENCER,
Obstetric Physician to University College Hospital, London.
T. JENNER VERRALL,
Direct Representative for England on the General Medical Council.
F. M. SANDWITH,
Gresham Professor of Medicine.
E T. NEATHERCOAT,
Vice-President of Pharmaceutical Society of Great Britain.
ALFRED COX,
Medical Secretary of the British Medical Association.
DAWSON WILLIAMS,
Editor of the *British Medical Journal*.
J. Y. W. MACALISTER,
Librarian of the Royal Society of Medicine.
C. O. HAWTHORNE,
Representing the Royal Faculty of Physicians and Surgeons of Glasgow.
J. P. GILMOUR,
Editor of the *Pharmaceutical Journal*.
WILLIAM RUSSELL,
President of the Royal College of Physicians of Edinburgh.
J. W. B. HODSDON,
Late President of the Royal College of Surgeons of Edinburgh.
JOSEPH O'CARROLL,
President of the Royal College of Physicians of Ireland.
WILLIAM TAYLOR,
President of the Royal College of Surgeons in Ireland.

LETTER FROM THE DIRECTOR IN EUROPE OF THE COMMISSION FOR RELIEF IN BELGIUM.

3, London Wall Buildings, London, E.C. 2, Nov. 20th, 1917.

Dr. H. A. Des Vœux, Honorary Treasurer of the Belgian Doctors' and Pharmacists' Relief Fund.

DEAR SIR,—We wish to emphasise the claim that Belgium has upon all the friends in the outside world who are trying to relieve her continually increasing distress. In spite of all we can do, her position to-day is more perilous than it has ever been, and far from relaxing our efforts we must, with renewed energy, see to it that every possible means of tiding over the starvation and destitution there is made use of. The most difficult class to reach is the very class that your Fund in the past has ministered unto—namely, the families of the doctors and pharmacists who may not dig, to beg they are ashamed. If the supporters of your Fund knew how much actual suffering they had allayed, and how much potential moral and physical suffering they had prevented, they would not cease to continue their support, many as are the claims now made upon them. This office is a gulf into which pours the stream of Belgian misery, and it would not be difficult to supply you with hundreds of testimonials as to the state of things there, but any of them tells the whole story: "The misery has become terrible and increases every day. It pursues us wherever we go. In the streets we see the emaciated figures of our neighbours; eyes sad, heads lowered. One would think that the people had aged twenty years by reason of these unmerited calamities." Another message comes: "Life becomes mere suffering; no liberty, no food. We are chained and starved in one. For three years we have fasted to such a point that now we scarcely recognise one another. The times are indeed hard."

The people who receive your kindness and charity are grateful in the extreme. Wave after wave of gratitude sweeps over the country. Some day you will know of it. Finally, it is needless to say that all the charities in Belgium are well administered—there is no leakage by the way. Only those who deserve it get relief, and never more than they need. The funds from your society are paid over to a commission of eminent gentlemen of your profession and the distribution is under their personal supervision. The knowledge that their associates in England have not forgotten them is an inspiration to the whole profession at a time when moral support is perhaps as much needed even as food.

Faithfully yours,
(Signed) W. B. POLAND,
Director for Europe.

THE AUDITORS' STATEMENT OF THE PRESENT POSITION OF THE FUND.

TREASURER'S CASH ACCOUNT, 1ST JULY TO 30TH NOV., 1917.

1st July. To Balance...	£5477 13 4	By Relief	£
,, Interest...	34 0 7	,, Clothes	
		,, Administration expenses	
		,, Balance Cash at Bank ...	149
	£5511 13 11		£551

We have examined the above account with the books and vouchers of the Fund, and certify it to be correct according to the books. In our opinion the receipts and payments have been fully recorded, and we have compared the receipts with the published acknowledgments and have had produced to us certificates as to the correctness of the balance as shown. CREWDSON, YOUATT, AND HOWARD, Chartered Accountants, Auditors.

70*a*, Basinghall-street, London, E.C. 2, 5th Dec., 1917.

This pecuniary position corresponded with the estimate of the Committee, earlier in the year, that the funds in hand would enable a mensuality of £800 to be sent during 1917 to Belgium, but that the end of 1917 would see the practical exhaustion of the Fund.

SUBSCRIPTIONS RECEIVED TO THE SECOND APPEAL FOR THE FUND.

THE LANCET	£50 0
Medical Insurance Agency (Chairman: Dr. G. E. Hastip)	50 0

THE CONTROL OF VENEREAL DISEASES

The Neglect of Gonorrhœa.

Lieut.-Colonel E. T. Burke, at present serving with the Mesopotamian Expeditionary Force, writes of the danger which exists at the present time of attention being devoted too exclusively to syphilis to the neglect of gonorrhœa. There is a tendency both for medical and lay opinion to regard gonorrhœa as being, compared with syphilis, of slight national importance. In his opinion the reverse is the case. The following points summarise the position regarding syphilis :—

1. The public realise the seriousness of the disease inasmuch as the infected individual usually applies for treatment early.
2. The medical profession realise the danger to the State that syphilis, and it is prepared to assist in every way in limiting it.
3. The State, since the publication of the Report of the Royal Commission, realises its responsibility in the matter, and is taking steps to deal with it.
4. Local authorities are formulating schemes to control it, to diagnose it, and to treat it, and educational campaigns are being instituted to enlighten the public with regard to venereal diseases.
5. The treatment of syphilis is specific.
6. The cure is rapid and permanent.
7. It can be stated when cure is completed and the patient no longer infective.
8. Treatment causes no inconvenience to the patient, and takes up little of the medical attendant's time.

These facts reduce the menace of syphilis considerably. The danger has been appreciated and means taken whereby to combat it. Unfortunately, with gonorrhœa the case is different. The disease is regarded as more of an inconvenience than anything else, the lesion being a superficial one and remaining so; and thus in many cases the patient hesitates to seek treatment at the hands of his own medical attendant and too often drifts into the hands of the prescribing chemist or the quack, or treats himself with a urethral syringe and by swallowing draughts of copaiba and sandalwood oil.

An acute gonorrhœa rapidly increases in severity and may—supposing that no complication has appeared—decline and the confirmed optimism of the patient makes him believe that he is now on the high road to complete recovery. As soon as discharge and the pain have disappeared the patient imagines that he is once more in healthy state, and resumes illicit intercourse or marital relations. In this way he may infect or cause to be infected a great number of people. The national danger of a man suffering from a gleet is enormous The rate of progression is geometrical, for if the original patient infects one or two woman she may in turn infect several men, each of whom may infect another woman, and so on.

The fact that the public have not appreciated the importance of gonorrhœa has reacted on the medical profession. There has, generally, been no great interest taken in the disease. Few practitioners have much experience of

treatment, and, with the exception of gonorrhœal arthritis, it seldom appears in the wards of a general hospital. The treatment of gonorrhœa is something more than the treatment of its symptoms. Cure is not attained until the urethra is completely free from the gonococcus. In the vast majority of cases treated no attempt is made to ascertain as to the presence or absence of gonococci, but the patient and the medical attendant rest satisfied with the disappearance of the grosser symptoms.

The difficulty both of diagnosis and treatment of gonorrhœa in the female is enormous, and it is safe to attribute a great deal of gynæcological trouble to former undiagnosed and untreated gonococcal infection. The following points summarise the present condition of gonorrhœa:—

1. The public are uneducated as to the importance of the disease.
2. The medical profession are not so well educated regarding diagnosis and treatment of gonorrhœa as of syphilis.
3. There is no specific treatment.
4. The best treatment is expensive and demands a skill and an amount of time not at the disposal of the general practitioner.
5. To state when the patient is non-infective is extremely difficult.
6. Under inefficient treatment the disease becomes chronic and the patient, unknown to himself, remains capable of infecting others.
7. Gonorrhœa in the female often goes undiagnosed and treatment is notoriously difficult.
8. The prevalence of treatment by chemists, quacks, and the patient himself constitutes a great danger.

For these reasons, which apply with special force only to gonorrhœa in contra-distinction to syphilis, Colonel Burke holds that the former disease ought at the present moment to be regarded with greater anxiety than the latter. It is now, when the machinery is in the course of erection for dealing with the whole problem, that the claims of gonorrhœa should not be lost sight of as they have been in the past.

The Treatment of Syphilis.

The article on the Treatment of Syphilis, by Lieutenant-Colonel L. W. Harrison, in the July number of the *Quarterly Journal of Medicine*, is a careful and practical presentation of an important subject, and is one that no practitioner concerned in the treatment of syphilis can afford to neglect. The history of the introduction of the newer remedies is briefly outlined, and then full details of the various methods of administration, with their advantages and disadvantages, are given. The comparative value of different methods of treatment, the nature of the by-effects of each, and the precautions necessary to obviate or lessen them, are all critically examined. The contra-indications of the arsenical preparations are also clearly described. The concluding section gives some useful details of the general arrangement of syphilitic cases, those in which there is no clinical evidence of disease of the central nervous system being differentiated from those in which such symptoms are present. A useful bibliography with 150 references is appended to the article.

The Crèche and Acquired Syphilis in Infants.

Dr. George Pernet, in a paper upon this subject, published in the *British Journal of Children's Diseases* (July–September, 1917, p. 168), sounds a useful note of warning to be on the look-out for cases of this character, and especially, if possible, to prevent their admission to, or at any rate their power of infection within, the artificial surroundings and circumstances of the crèche. He instances the following two cases which had recently come to his notice:—

The first was a male aged 18 months. For the fortnight previous to examination there had been "boils" upon the buttocks. When seen the skin of the child was found to be more or less involved from head to foot. The type seemed to be like that of a generalised dermatitis exfoliativa, but the tint was sombre and dark, the affected areas looked infiltrated, and the squamæ were rather adherent. Altogether it did not fall in with dermatitis exfoliativa and something seemed to suggest syphilis. There was, however, no question of congenital syphilis. The mother was healthy, had had nine children and no miscarriages, and her Wassermann reaction was negative. Further, the age of the child was against it, as the congenital type always evidences itself before the third or, at latest, sixth month. Against dermatitis exfoliativa neonatorum was the experience that this condition nearly always occurs within the first few weeks of life and also is generally fatal. The baby was put on mercury and rapidly improved.

The second case was a male aged 9 months. For the rash, which appeared on the arms, face, and fingers three months previously, the mother had been using sulphur ointment; there were, however, on examination no signs of scabies. The rash was papulo-macular, typical of acquired secondary syphilis. The peri-anal region was involved. The child had had a hoarse cry for three weeks. The Wassermann reaction was positive. This child also did very well on mercury. In neither of these cases could the source of infection be traced. In neither, fortunately, was the mother infected, as she was unable to suckle the child. Early diagnosis of these cases is obviously important. The early age of the child and the special tendency to rashes and skin troubles tend to make one ignore the possibility of venereal infection as a possible factor, though it is, perhaps, a counsel of perfection to forbid such infants the crèche.

Dr. Pernet suggests that certain precautions could be reasonably adopted which would lessen the danger of their presence. The parents and nurses should be warned of the danger of suckling them. Teats should not be bandied about, as is so often done, and the child should, of course, have its own feeding appliances.

The Supply of Salvarsan Products in U.S.A.

The Adamson Bill which Congress has just passed authorises the President to license American citizens to prepare and sell products patented by alien enemies. Dr. J. A. F. Schamberg, speaking at the Philadelphia College of Physicians, said that the dermatological laboratories had applied for a licence to distribute arsenobenzol. More than 125,000 doses had already been used in the United States, and it was hoped to reduce the price of the individual dose to $1.50 for doctors and 80 cents for hospitals. The high price of German manufactured salvarsan—over $4.50 an ampoule—has offered great inducement to counterfeiting, and a gigantic swindle was recently detected by an inspector of the New York Department of Health. A man calling himself a medical man was convicted of manufacturing fake neosalvarsan from common salt with addition of a trace of colouring matter. The label and circulars of the original Farbwerke product were very carefully reproduced so as to be only distinguishable by experts, while the scale on which traffic had been done may be gauged by the fact that 50,000 aluminium containers had been ordered. It is satisfactory to know that on this side of the Atlantic salvarsan products are issued on Board of Trade licence after examination of batches by the Medical Research Committee.

The Prophylaxis of Venereal Diseases in Italy.

Dr. Charles Ruata, the veteran professor of materia medica in the University of Perugia, has written to us supporting the observations made by Dr. G. Archdall Reid in THE LANCET of Nov. 3rd on the application of ordinary antiseptic methods to the prevention of venereal infection. As medical officer of two big convict prisons, he noted on taking up his position 33 years ago the frequency of venereal diseases among the 40 odd soldier guards. Dr. Ruata soon decided to lecture to them on the pathology of venereal diseases, particularly of syphilis, and including an explanation of Listerian methods. It is not necessary, he says, to use carbolic acid or any other antiseptic of the kind. Soap and water are sufficient when they are properly used. Dr. Ruata continues:—

When a man knows thoroughly the responsibility that he has for himself and for others he certainly takes every care to apply Lister well. Water and soap are always ready. The ointment of calomel is not practical at all: one cannot pretend that a man carries with him such an ointment. Since advising the use of soap and water I have had for 30 years no more cases of venereal disease among my guards. It seems to me that when all the soldiers, all the workmen, all the adult pupils of our schools are properly instructed in the pathology of venereal disease, this scourge of humanity will readily be stamped out.

Evidently the same need is present in Italy as here of exact instruction in the principles of surgical cleanliness.

Enlightenment Campaign.

At Sunderland the first meeting has been held of the new branch of the National Council for Combating Venereal Diseases. Under the auspices of the Birmingham Branch Colonel G. Barling, A.M.S., recently gave an address at which Mr. Neville Chamberlain presided.

New Schemes.

The scheme adopted by the Bristol city council has been approved by the Local Government Board and provides for six clinics a week, three at the Royal Infirmary and three at the General Hospital, with two beds for in-patients at each place. The sum to be paid to each institution is £637 10*s.* per annum, plus 6*s.* per occupied day for each bed. The total cost is provisionally estimated at £3150.

The Wolstanton and Burslem board of guardians have passed a resolution to the following effect:—

That subject to certain safeguards against abuse, the Public Assistance Authority should have power to detain cases of venereal disease when medically certified to be dangerous to others.

THE Queen has sent a Christmas donation of £10 each to the Chelsea Hospital for Women and the Royal Dental Hospital, Leicester-square.

Correspondence.

"Audi alteram partem."

ON THE "GREAT ASSISTANCE" OF AGGLUTINATION TESTS IN THE DIAGNOSIS OF ENTERIC IN ANTI-ENTERIC-INOCULATED INDIVIDUALS.

WITH SPECIAL REFERENCE TO DREYER'S METHOD, AND ALSO CERTAIN CRITICISMS BY CAPTAIN R. P. GARROW.

To the Editor of THE LANCET.

SIR,—THE LANCET of July 28th, 1917, contained a fifth communication by Captain Garrow, entitled "The Fallacies of Relying Solely on Agglutination Tests for Diagnosis of Typhoid Fever in Antityphoid-Inoculated Individuals, with a Special Reference to the Use of Dreyer's Method." In this he criticises the communications by several workers using the method, among others one by Dr. Cronin Lowe and myself upon "The Serum Reaction of Three Hundred Unselected Cases of 'Enteric' from the Eastern Mediterranean, with the Oxford Standard Agglutinable Cultures."[1]

I have been unable until now to comment upon these criticisms, some of which are unfair—no doubt unintentionally. Captain Garrow's argument seems to be as follows:—

1. We have "accepted," and "almost without question," what he alleges to be the "teaching of the Oxford School of Pathology," and, among other teachings, the "belief that an agglutination fluctuation of greater or less extent has a *pathognomonic significance*." Consequently, we do not realise that a diagnosis of enteric in the inoculated can only be made—when the enteric bacilli are not demonstrable—by *combining the clinical and serological evidence*.

2. The fact that we did diagnose on serological grounds alone "typhoid patients ('our patients,' says Captain Garrow) arriving convalescent in England" is an awful example of the "pathologist's lack of faith in clinical diagnosis."

3. The fact that we did diagnose a proportion of true typhoid fever (25 cases in 300) "higher than ever actually occurred in the Mediterranean" is an awful example of the absurdity of "relying solely upon agglutination tests."

4. As we did not know whether to diagnose certain cases as typhoid or not we "apparently" adopted a particular course, partly in order to *make* (sic) our "results correspond with Archibald's figures for blood cultures." By so doing we show the "cloven hoof" because the results of blood cultures are likely to give an *unduly* high proportion of typhoids and this is what we found!

I. It is not my place to consider whether Captain Garrow correctly describes the teaching of the Oxford School of Pathology. Dr. Lowe and I were not primarily concerned with that; *we confined ourselves mainly, and as far as possible, to the teaching in the Directions issued with the Emulsions* "on behalf of the Medical Research Committee" from Oxford (*vide* our Conclusion 16). The Directions do not state that diagnosis may be made by "relying solely upon agglutination tests" and by regarding fluctuations of small extent as "*pathognomonic*." Captain Garrow must prove it was thought that they would be interpreted in that way or that several of those using them did do so. Apart from this, we did not accept *all* the teaching of the Directions, for our paper concluded as follows: "We have confirmed all the statements" of the Directions "with one minor exception, ... *as far as our opportunities have permitted*" (italics mine) (Conclusion 16). Further, we did not accept what Captain Garrow alleges is the teaching of the Oxford School of Pathology that "an agglutination fluctuation of greater or less extent has a *pathognomonic significance*." On the contrary, we admitted the "possibility," as Tidy's work goes to show, "that the general lowering of 'resistance' which occurs in diseases associated with prolonged pyrexia may *sometimes* temporarily diminish the titre of 'inoculation' agglutinins," such fluctuation could not be "pathognomonic."

Again, in trying to explain why a paratyphoid infection often increased typhoid inoculation agglutinins we referred to some former work by Dreyer and Walker, who found if an animal immunised with one micro-organism be subsequently inoculated with another micro-organism "its agglutination titre for the first micro-organism exhibits a new rapid rise of greater or less extent and pursues a curve similar to the ordinary inoculation curve." We suggested that the increase in typhoid inoculation agglutinins was, in the words used by Dreyer and Walker when referring to their experiments, "due to a reaction of a general non-specific character," such fluctuation could not be "pathognomonic." It seemed unnecessary to refer to other well-known agglutination fallacies often mentioned in text-books; for example, the occasional great delay in the appearance of typhoid agglutinins in cases of typhoid, or the rare appearance of typhoid agglutinins in acute tuberculosis: I met with a case apparently of this sort some years ago. Though we did not say so, it is also possible that severe fatigue, starvation, cold, alcoholic excess and "indisposition" and other *factors*, may *sometimes* affect the titre of "inoculation" agglutinins. We do not know. Let us "wait and see," or better, as we are not statesmen—let us "try and see"!

Because we did not know whether "an agglutination fluctuation of greater or less extent has a *pathognomonic significance*" and because we hold the same views as Captain Garrow, "that in cases which are 'negative' bacteriologically, diagnosis should rest upon combined clinical and serological observations, and not as a rule on the results of one or other methods alone," our last conclusion but one was as follows: "The prophylactic use of mixed paratyphoid vaccine will undoubtedly increase the difficulty of diagnosing paratyphoid, as typhoid vaccine has done in the case of typhoid. The difficulty will be greatest in those mild cases which occur, especially in the partly protected, where the infecting bacteria cannot be demonstrated. Repeated serological tests will be of *great assistance* in the diagnosis (italics mine). The most suitable method for routine work in war-time is Dreyer's with the Oxford emulsions" (Conclusion 15).

Captain Garrow omits all reference to this statement, which, because of its great practical importance, was placed near the very end of our paper. He has led his readers to infer that we advocate the general practice of "relying solely by agglutination tests for diagnosis of typhoid fever in antityphoid inoculated individuals." We do not advocate any such procedure. I, for one, have always taught, as my own students can bear witness, the necessity of considering serological and certain other laboratory tests as of "great assistance in diagnosis," but not infallible. The fact that before devoting myself entirely to pathology I was for four years an honorary assistant physician is only one of the reasons why I believe in the close coöperation of the laboratory and the clinician.

The necessity of repeated agglutination tests in antityphoid inoculated patients with continued fever as an aid to diagnosis, was laid down by the pioneer work of R.A.M.C. officers in India, as D. Harvey and Grattan. The necessity of repeated tests was first officially recognised in an Indian report published in 1910, which says that in such cases of "continued fever ..... practically no information is given in the statement Widal positive 1/40," consequently "an agglutination chart should be kept, the results being carefully recorded two or three times weekly during the illness."[2]

II. Before considering Captain Garrow's second point, that we actually *did* "rely solely on agglutination tests" to diagnose our patients, and show a "lack of faith in clinical diagnosis," and did not in practice recognise the necessity of combining clinical and serological observations, it is necessary to make an explanation. We were under a misapprehension concerning the meaning of the term "enteric."

In November, 1915, at the beginning of our observations, we were struck by the fact that the majority of cases were called "enteric." We thought this meant typhoid, for "enteric" was the term suggested by the Royal College of Physicians for the proper *registration* of "typhoid." (See last edition of "Nomenclature of Diseases, 1906.") We did not then know that the D.M.S. of the Eastern Mediterranean had given instructions that the term

[1] THE LANCET, August 3rd, 1916.

[2] Annual Reports of Divisional Sanitary Officers and Enteric Depôts, 1910. Simla: Government Central Branch Press.

"enteric" should be used to include paratyphoid as well as typhoid. It is true in our paper we too employed the term "enteric" in the new sense, but we acted upon Dr. Leonard Guthrie's letter to THE LANCET.[3] Nevertheless, it is my impression that some of the medical officers in the Eastern Mediterranean arrived freshly from England, who knew little or nothing of paratyphoid, and who had not yet fully realised the value of antityphoid inoculation, actually thought their cases were suffering from typhoid, although they called them enteric. This, however, is unimportant.

Now we have always believed in the value of antityphoid inoculation. Indeed one of us, shortly after a certain notorious Germ-Hun advertisement, had twice pointed out its advantages in the lay press so strongly,[4] that he was attacked in a specially written booklet, which was distributed widely in Liverpool; its author, a medical man, displayed his unusual intelligence by saying that "the germs of typhoid fever have never been proved to exist"! We thought it was right therefore as part of our investigation to attempt to diagnose as far as possible the number of typhoid and paratyphoid infections. Such an attempt seemed specially desirable as no statistics of those infections in the Eastern Mediterranean had yet been published; indeed, the weighty ones collected by Martin and Upjohn did not appear till September, 1916. So far as I am aware, no official intimation came to the special enteric hospitals in Liverpool or elsewhere in England that the Mediterranean cases of "enteric" arriving between October and December, 1915, were—if they ever had enteric—mainly paratyphoid and rarely typhoid. For example, there arrived at two enteric hospitals in Liverpool and Southport during those months 247 cases of supposed enteric, 210 were sent in as enteric, 4 as typhoid, 16 as paratyphoid, 15 as enteric and dysentery, 2 as paratyphoid and dysentery; and that was practically all the information the medical officers treating them received.

We imagined after writing in Conclusion 15 "repeated agglutination tests will be of great assistance to the diagnosis," instead of "will make the diagnosis," everyone would understand that though we relied "solely on agglutination tests" in *attempting* to diagnose our 300 patients, we did so *because there were no other means available*. We actually said "because practically all were 'convalescent' nothing could be learned by blood cultures, and very little by examining the excreta, we *attemvted* (italics mine) to arrive at a bacteriological and therefore correct diagnosis, by testing the agglutination reactions." We used the word "attempt" designedly, because we realised the difficulty of diagnosis in convalescence and by serological tests alone.

Further, in order to justify our attempt at re-diagnosis, and to avoid being accused of "lack of faith in clinical diagnosis"—as we have been accused—we took the precaution of saying "the diagnosis of typhoid" (enteric would have been better) "in the Eastern Mediterranean was *less reliable than usual*" during the "summer" of 1915, because (1) "it was only controlled by blood cultures in about 10 per cent.," though in a later series of Eastern Mediterranean cases "not included in our paper," "34 per cent. gave a history of blood cultures," due, no doubt, to improved medical organisation, (2) the serological controls which were carried out in about 40 per cent. were, we believe, unsatisfactory, (3) "pyrexia of unknown origin is frequent in hot climates," and fully one-third had a history of "acute dysentery." Captain Garrow, to strengthen his case against us, the pathologists, omits any reference to these statements.

A very high authority has informed me in writing that there were occasions during the outbreak when "cases passing 'blood and slime' were diagnosed as dysentery and those suffering from continued fevers without these objective symptoms were returned as enteric, i.e., on clinical grounds." It is a fact that owing to the exigencies of war the diagnosis in a large proportion of our "enterics" was merely tentative. Therefore, our *attempt* at re-diagnosis by serological tests alone was perfectly justified, for we only found enteric bacilli in 14 cases, 2 being typhoid and 12 paratyphoid. It does not show a "lack of faith in clinical diagnosis," nor that we advocate "relying solely on agglutination tests," as Captain Garrow's criticism leads his readers to think.

Captain Garrow asserts we accepted the teaching of the Oxford School "almost without question." On the contrary, we made 3000 tests, we questioned many statements in the Directions "*as far as our opportunities permitted*," such as the problem of co-agglutination, the accuracy of the technique, we even "furnished," as Captain Garrow once demanded, "agglutination results controlled by blood culture," so that the data obtained "might guide to the interpretation of agglutination results in other cases in which blood cultures failed to give a diagnosis," though in our 14 cases the enteric bacilli were isolated mainly from the fæces.

III. In order to study by collective methods the variation in typhoid agglutinins and appreciate as far as possible their significance, we analysed the 133 cases which agglutinated typhoid only, and were tested at least twice. There were 27 in which the agglutination titre fell one tube—i.e., diminished slightly. We had great difficulty in deciding whether these cases should be regarded as probably typhoid or not.

I will first give Captain Garrow's interpretation of our solution: "3. In the summary one-half these (i.e., 14 cases) are assumed (!!) to have been infected with typhoid." (Observe the two!!) We actually said, "*even if* (italics mine) we assume that as many as half ..... were also infected with typhoid bacilli." Captain Garrow's omission of the two words "even" and "if," *both* of which were deliberately used to qualify the whole sentence, must be accidental. But this omission is characteristic of the hasty and unintentionally unfair way he has represented some of our statements. Captain Garrow says further on, these cases "are assumed" to be typhoid (which they were not), apparently (1) on the sporting ground that they considered the "odds were even"; and (2) "with the object of making their results correspond with Archibald's figures for blood cultures." The division of the paragraph into two parts is mine; let us consider Part I.

As already stated, we had great difficulty in classifying these cases, but as the fall in titre was "so slight" we wrote: "It is in the majority most probably due to a gradual normal disappearance of inoculation agglutinins, or to technical error, and not to active typhoid infection." Nevertheless, though we believed the "majority" were *not* typhoid it seemed a fair and practical compromise, to halve the number of the "27 other cases," not on a "sporting ground," but in order to avoid being accused of making our statistics *too favourable for antityphoid inoculation!* Has Captain Garrow any sense of humour? Even after halving them, we took the precaution of referring to them later as "doubtful cases" (Conclusion 11).

Captain Garrow concludes that we have "serologically diagnosed" 25 cases of typhoid fever in antityphoid inoculated convalescents in the Mediterranean, which he says "represent about 16 per cent." This is untrue. We actually diagnosed 11 cases or less. Conclusion 11 reads: "Of 133 examined at least twice, *11* showed a marked fall or rise in titre, demonstrating that *almost all*, if not all, had a recent typhoid infection. But *even including doubtful cases*, not more than 10 per cent. of the 300 showed evidence of recent typhoid infection. This percentage, however, would have been increased had the first examination taken place sooner, but so also would the percentage of paratyphoid cases" (italics mine). The words "almost all" were used deliberately because we realised there might possibly be *other* explanations of "the marked fall or rise in titre." The "doubtful cases" have already been alluded to; even *including* them the case for antityphoid vaccine was overwhelming.

It is astonishing that Captain Garrow omits to quote *our* figures, 10 per cent. and 11, and as given in Conclusion 11, which summarises our results to the best of our ability. Of course he is quite fair in giving *his* interpretation of these results to try to prove his case. But he does not realise that he is quite unfair in suppressing *our* interpretation of them, and so misleading his readers as to what we really said. In passing, Captain Garrow is incorrect in assuming that *all* the 25 men were inoculated. We questioned 240 of our cases and said: "1 refused inoculation; 1 was not inoculated; 4 were not sure"; we do not

[3] "Enteric Fever: (*a*) Typhoid Fever; (*b*) Paratyphoid Fever." See 1916 edition, "Nomenclature and Classification of Diseases," Roy. Coll. Physicians. At present in the press. THE LANCET, 1916, vol. i., p. 887.

[4] Microbes, the War and the National Neglect of Science, C. Tinling and Co., Limited, Liverpool and London, 1916.

know whether the remaining 60 were inoculated—neither does he. It is a fact that a percentage did escape inoculation; thus Archibald had 9 and Walker Hall 6 bacteriologically proved cases of typhoid among the *uninoculated* from the Mediterranean.

IV. And now for the cloven hoof! Captain Garrow says we "apparently" halved the cases "also with the object of *making* their results correspond with Archibald's figures from blood cultures"! This statement is untrue. After reading it I should not have been greatly surprised had he said when we showed "paratyphoid B infections were commoner than paratyphoid A till November, after which the reverse obtained"—Glynn and Lowe appeared to have *made* their results correspond with Archibald's figures for blood cultures." Captain Garrow evidently refers to the following sentence: "Our proportion of one typhoid to not less than about 4 or 5 paratyphoid cases is corroborated by Archibald's figures for blood cultures," his proportion being 1 to 6·4. In other words, even if we included the *doubtful* typhoids and made the worst possible cases *against* anti-typhoid inoculation, yet our serological evidence proved, as Archibald's hæmological evidence proved, that paratyphoid infections were in the great majority. As a matter of fact, excluding doubtful cases, we diagnosed 11 typhoids (3·7 per cent.) and 110 paratyphoids (37 per cent.), or a proportion of 1–10. Martin and Upjohn, in a series of 350 cases, all of which were believed to be enteric, diagnosed 7 per cent. typhoid and 93 per cent. paratyphoid, a proportion of 1–13. Fortunately for us their figures were published *after* ours! Perhaps our meaning might have been better expressed. Still Captain Garrow would have displayed more courtesy by omitting his innuendo, especially as it is evident, from his use of the word "apparently," that he was not sure of his ground.

When referring to the six cases agglutinating typhoid only, which showed a marked steady fall in titre, we said this was "conclusive evidence of a recent typhoid infection." Here we have, in fact, regarded a certain type of agglutination fluctuation as pathognomonic. We admit the evidence is *not* conclusive, and that our statement is inconsistent with the others in our paper. It is noteworthy, however, that Captain Garrow himself is also inconsistent on this very point. He writes at the beginning of his paper concerning "inoculated soldiers" "it is my opinion that, in cases which are 'negative' bacteriologically, diagnosis should rest on combined clinical and serological observations, and not, *as a rule*, on the results of one or other method alone."[5] Therefore, he admits that certain types of agglutination fluctuations may exceptionally be pathognomonic, and that a diagnosis may exceptionally be made by "relying solely" upon them. But in Conclusion 6 of this same paper he says: "It cannot be too strongly insisted upon that agglutination tests (by any method) *cannot* be relied upon *solely* to furnish a diagnosis of enteric infections against which the patients have been inoculated"! (italics mine).

The general accuracy of Dreyer's technique and the general soundness of some of the Directions, and also the fact that, in spite of the handicap of examinations made during convalescence, valuable information could be obtained by a collective investigation, is indirectly demonstrated in the following observations. Eighty-three cases agglutinating either paratyphoid A or B were examined at least twice; the paratyphoid titres presumably from infection fell during an average interval of 4 4 weeks in 81 9 per cent.; 48 per cent. fell markedly; but the typhoid titre presumably from inoculation fell in only 16·6 per cent., and only 1·4 per cent. fell markedly.

I ventured to state in a letter to THE LANCET: "Had Dreyer's method been employed earlier in the war far fewer soldiers would have been invalided home from the East with a diagnosis of typhoid fever"[6]; the word should have been "enteric." Captain Garrow in the summary concludes: (7) "The official adoption of Dreyer's technique as a standard agglutination technique in the Army, together with the teaching of the Oxford School of Pathology as to the diagnostic significance of the agglutination fluctuation in an inoculated soldier, would be disastrous to enteric statistics in the Army." He does not object to Dreyer's technique, for he wrote in an earlier communication: "I believe that the Oxford School of Pathology have, by working up this method to its present state of accuracy, performed a great service to medicine in general and military medicine in particular." I agree with every word of that.

As previously stated, we were not concerned with Captain Garrow's interpretation of what the Oxford School teaches. I still believe that had the Technique and Directions been extensively used in 1915 the result would have been beneficial—not only would fewer soldiers have been invalided as "enteric," but many more of those who had enteric would have been correctly differentiated into typhoid, paratyphoid A, and paratyphoid B. I know from personal experience that some of those who went East to do laboratory work had neither the special training nor knowledge to fit them for such responsible duties. Laboratory courses for R.A.M.C. officers were not so common in 1914–15 as they are now, which is in itself a recognition of the want of training in the earlier days. The War Office, at any rate, do *not* think that the results of employing Dreyer's technique "would be disastrous to the enteric statistics in the Army," for in September, 1916, an A.C.I. was issued telling how the Oxford emulsions with, of course, the Directions could be obtained at the home laboratories. When someone introduces a new scientific method, and a second subsequently supports it strongly, a third often "smells a rat." There is no rat—in our case! We do not know Professor Dreyer except by reputation, we hardly know Dr. Ainley Walker. We had no interest in the Oxford emulsions. We were not asked by any person or body to investigate them. We did so entirely "on our own," and as impartially as we hope later to have the honour of trying Captain Garrow's special agglutination machine. Perhaps, like the historic sons of a certain gentleman who came to a sudden and bad end, we took "too much upon" ourselves. Still, we desired to direct more attention to the many and great advantages of Dreyer's technique and the emulsions for routine work in war time, and the general soundness of the Directions "as far as our opportunities permitted" us to express an opinion, for we were convinced that they would be of "great assistance" in the diagnosis of enteric in antityphoid inoculated individuals, though they may eventually be found capable of some improvement.

We admit being misled regarding the term "enteric"; we admit being inconsistent in practice on one point, as Captain Garrow has been inconsistent in principle. It may not have been sufficiently clear to all, that though we did in fact "attempt" a diagnosis of typhoid by relying solely upon certain types of agglutinin fluctuation and in convalescence, we did so because the circumstances were exceptional, but did not, and do not, advocate such a proceeding "as a rule."

We are indebted to Captain Garrow for enabling us to explain these points, but we decline to be drawn into a controversy with him. We fully recognise Captain Garrow's scientific and critical ability, and it is a pleasure to record our information that he was among the first in a certain Mediterranean area to recognise in the autumn of 1915 that cases called enteric—if they had enteric—were mainly paratyphoid and rarely typhoid. We, in our conceit, imagine that we also were among some of the first to recognise the same thing independently in England, and by serological tests alone. Nevertheless, we find it difficult to understand the tone, or, to use a more fashionable word, the "psychology," of some of Captain Garrow's methods of criticism. He formerly wrote: "I do not believe that personal emotions such as love or hate can possibly enter into discussions on purely scientific matters." After such an utterance, if for no other reason, we had a right to expect throughout the scrupulous fairness of an upright judge, not on occasion the omission, the misrepresentation, and the innuendo of counsel for the prosecution! Captain Garrow would make a brilliant lawyer.

We shall always read Captain Garrow's future communications with profit. We shall read them with pleasure if he will only admit that, in the heat of the game, he has sometimes unintentionally been "off-side," and, like a true sportsman, make an "amende honorable."

I am, Sir, yours faithfully,

ERNEST GLYNN.

Thompson Yates Laboratories, The University, Liverpool,
Nov. 26th, 1917.

[5] See also Captain Garrow, THE LANCET, 1916, Dec. 16th.
[6] THE LANCET, Nov. 18th, 1916.

THE PERSONATION OF MEDICAL PRACTITIONERS.

To the Editor of THE LANCET.

SIR, — The characteristics of medical impersonators mentioned in the leading article in your issue of Dec. 8th do not at all tally with those of the only case I have met, Siddons, and the impressions he left on me after working on the same medical recruiting board for three months may perhaps be of some interest. Had Siddons read "Behind the German Veil," by Beaufort, the man who lately bluffed his way all over Germany, visiting Hindenburg, and inspecting the German fleet without at any time being in possession of a pass, he could not have improved his tactics, having nothing to learn from any past-master of bluff. Far from avoiding recognition and exposure by keeping in the background, he was for ever hustling himself into the limelight. When he decided to join a medical board he chose that nearest to headquarters, and entered on his duties, as it were, under the august nose of authority, where no one would dream of looking for such as him.

Siddons was a powerfully built, thick-set man with a strong personality, a clever-looking face, and rather overbearing manners. I did not know him socially, as his personality did not attract me, but I should not be surprised to hear that he was a good poker player. Anyhow, with no cards in his hand he managed to bluff us all. He was always ready to back up his opinions by argument, and the only evidence he showed of insufficient education was in the occasional mis-spelling of medical terms, but I had previously found eccentricities in this respect so unexpectedly common amongst my colleagues in various parts of the country that it carried no weight with me. He was very keen about his work and always eager to examine or discuss anything rare and to pick up any useful information, such as the gleanings I gave him from Mackenzie's latest book on the heart. As might now be considered only natural on the principle of "set a thief to catch a thief," he had a distinct *flair* for malingerers, and not unjustifiably rather prided himself on his results.

As regards his capabilities of diagnosis, in one case of suspected tuberculosis where there was a conflict of opinion the tuberculosis officer to whom the case was referred supported his diagnosis. The only time I believe I had him was one afternoon, when two men in immediate succession proved to have complete transposition of viscera, and even now I am not quite sure that he did not bluff me.

It is suggested in the leading article that he underclassed recruits in exchange for bribes. This is not so. Under the system we worked, one man only being responsible for part of the examination, such a thing would not only have been difficult but dangerous, because we were working under a president as keen as any terrier after rats to pounce on one or other of us for faults of commission or omission. From what we were able to find out afterwards his method was not so crude and inartistic as such a statement would imply. He extracted rewards afterwards, by skilful innuendo and suggestions of undue influence, from men who had properly been classed low: a really far cleverer procedure. Although he was a man I did not like, to give the devil his due, I think all who worked with him are agreed that no doubt owing to a rather unsympathetic nature and a suspicion of fraud in others he was rather inclined to class recruits too high.

To any who may be surprised at his imposture remaining undetected so long I would suggest that the results of passing an easy qualifying examination and thereafter for years relying on a good bedside manner for success rather than the reading of medical literature may have something to do with the undoubted fact that Siddons's work as an examiner of recruits was distinctly above the average. He had very good judgment, was apparently all his life interested in medicine, and had his life been laid in times when the want of means is no bar to entering the profession his ending might have been very different. But had I needed it this experience would have taught me the difficulty of judging a man's qualifications from his capabilities.

I am, Sir, yours faithfully,

FRANCIS HEATHERLEY, M.B., B.S. Lond.,
Rock Ferry, Cheshire. Dec. 14th, 1917. F.R.C.S. Eng.

BACK PRESSURE AS A CONSEQUENCE AND AS A CAUSE OF HEART FAILURE.

To the Editor of THE LANCET.

SIR,—The appearance of Dr. Harrington Sainsbury's letter in your issue of Dec. 8th on the Theory of "Back Pressure" as a Consequence and as a Cause of Heart Failure suggests to me that your readers may be interested in another aspect of the means by which mechanical obstruction may possibly give rise to myocardial exhaustion and cardiac failure.

The point to which I would draw attention, and to which I have been greatly attracted for some time, may be put briefly in the form of a question as follows: "Is the distension of the auricle that occurs in connexion with mitral stenosis the exciting cause of the fibrillation of its wall?" No doubt an answer could be supplied by experimental research, but I am unfortunately not in a position to carry out the investigation necessary for the application of this inquiry. From the clinical point of view, however, it is possible to adduce a good deal of evidence in support of an affirmation of the view that has been brought in question. Thus auricular fibrillation rarely, if ever, occurs as an early manifestation of mitral stenosis; on the contrary, it almost invariably appears in the late stages of the valvular narrowing, when the intra-auricular pressure is greatly increased and the auricular distension is considerable, and when, therefore, there is well-marked stretching of the auricular walls. It is unnecessary to support these statements by clinical evidence, since it may be taken for granted that they will meet with general approval and assent.

Again, all treatment which has for its object the lowering of intra-auricular pressure, and hence the lessening of the stretching of the muscle fibres of the auricular wall (with the possible restoration of auricular tonus) tends to promote the disappearance of the fibrillation and the reappearance of the normal auricular rhythm. In point of fact, rest in bed, the administration of digitalis, free purgation, venesection, &c., either severally or collectively, are frequently instrumental in abolishing the abnormal rhythm and restoring the presystolic murmur. In these instances it is not an unreasonable supposition that the lessened stretching of the auricular wall is followed by some recovery of muscular tonus and resumed functional activity of the mural muscle fibres.

Lastly, there is the analogy which is presented by other hollow muscular organs when their cavities are distended and their walls put on the stretch by reason of obstruction to the discharge of their contents. For example, the stomach, the intestine, and the bladder not uncommonly undergo what may be termed hyper-distension, and in these circumstances fibrillary twitching of the muscular walls of these organs may be observed, which not improbably is closely allied to, if not identical with, the fibrillation that occurs in the case of the auricle under like conditions. It may be, too, that fibrillation is more readily evoked in degenerated unstriated, or partially striated, muscle fibres than in healthy contractile tissue.

Now apart from electrical stimulation, I am not aware that a satisfactory cause of the fibrillation of the auricle has so far been advanced, and I submit, for the reasons which have been given, that mechanical obstruction is a possible exciting causal factor of this condition. Moreover, should this view receive experimental confirmation a most interesting situation would arise, inasmuch as mechanical obstruction as a factor in the causation of heart disease, the *bête noire* of modern cardiology, would arise Phœnix-like from the ashes of the many fiery immolations that have been practised on it in recent years. I am, Sir, yours faithfully,

Upper Berkeley-street, W., Dec. 13th, 1917. E. H. COLBECK.

ETHER CLONUS.

To the Editor of THE LANCET.

SIR,—It would be interesting to know whether anæsthetists in military hospitals have found this curious and troublesome phenomenon more common among soldiers from overseas than it is among patients in civil hospitals. In my own limited experience it is. In a county hospital where I gave "open" ether as an anæsthetic about 1000 times, in the

years 1915–1917, the ether tremor only occurred in five cases. In this war hospital, recently opened, out of 41 operations performed under "open" ether anæsthesia, the tremor has occurred in three cases, not during induction, but after the establishment of full anæsthesia when the patient has been allowed to revert to a lighter degree of narcosis. Is it possible that active service under modern conditions may, in certain cases, induce a nervous condition favourable to the tremor? I first saw the phenomenon at Addenbrooke's Hospital, in 1880, when the late Sir George Humphry was amputating a leg. He was about to tie the vessels when the stump began to shake with great violence. Turning to the students, he remarked, "Gentlemen, this is a complication which I have never experienced before. Let us wait till it stops." Humphry had then about 30 years' experience of operations under anæsthetic, and it is rather remarkable that the condition had not already come under his observation.—I am, Sir, yours faithfully,

W. D. ANDERSON.

Fusehill War Hospital, Carlisle, Dec. 11th, 1917

THE SURGERY OF EXOPHTHALMIC GOITRE.

To the Editor of THE LANCET.

SIR,—In Lieutenant.-Colonel T. P. Dunhill's paper on exophthalmic goitre, which appeared in your issue of Dec. 15th, there is much of interest, and more of common-sense than usually appears in surgical pronouncements on the subject. The article naturally and necessarily contains several references to Robert McCarrison's recently-issued work on the thyroid gland. As the author is either in India or on the high seas, it would be a long time before he could receive the issue of THE LANCET and a very long time before you could receive his reply; and as I am not only intimately acquainted with his views, but am in a humble sense the literary godfather of the clinical portion of his book, I make no apology for claiming the right to speak for him in his absence. There is nothing so vapid as a belated rejoinder.

By way of prompt rejoinder I cannot do better than point out that there is nothing in Colonel Dunhill's article which could in any way modify the validity of the following paragraph, which occurs on p. 240 of McCarrison's book:—

> There is no reason to doubt but that a sufficiently extensive thyroidectomy such as is practised by Dunhill will mitigate those symptoms which may be due to hyperthyroidism on the one hand, or to perversion of the thyroid's secretion on the other. But we must realise the limitations of such an operation and not seek to credit it with the cure of a malady the cause of which it leaves untouched. Nor should the possibility of the subsequent appearance of thyroid deficiency be overlooked. In the present state of our knowledge such an extensive thyroidectomy may be the best we can do in a small proportion of cases, but if it must be done let it be done only when all else fails, and let its results be recorded with scientific precision.

Neither is there anything in Colonel Dunhill's article to which any reasonable physician could object. Briefly expressed, his message seems to be that an operation on the thyroid gland in Graves's disease is not only justifiable but obligatory when the symptoms become urgent. With this we can all afford to agree; McCarrison's point is that the symptoms would never arrive at that stage if the disease were properly treated in its earlier stages; that, if the "medical filter" did its work properly, the knives of the thyroidectomist would rust from disuse. With much less emphasis than the occasion would seem to warrant, McCarrison says:—

> I believe that surgery has a more rational place in the treatment of this disease than that of interference with the thyroid gland—namely, the correction of such conditions as chronic appendicitis, chronic gall-bladder inflammation, chronic septic tonsillitis, gastro-intestinal stagnation or other disorders which may obviously be benefited by it. For of what use would it have been to have removed the major part of the girl's thyroid, whose case we have considered in an earlier part of this section, and to have left her with such a degree of gastric stagnation as X ray examination revealed? Such an operation might have improved her condition temporarily, but without the correction of the stagnation it could not have restored her to health.

Lord Palmerston is credited with the remark that nothing could be more misleading than figures, except facts. In connexion with Graves's disease it is the unfortunate fashion to quote the figures of a physician who claimed as a proud fact that 50 per cent. of his cases were cured by ordinary medical means. I have not at the moment an opportunity of searching the records to discover the date on which these glad tidings of great joy were conveyed to a goitrous generation; but if there be a physician of to-day who by ordinary medical means cannot cure more than half the cases of exophthalmic goitre which come under his care, I can confidently recommend him to forsake medicine and take to surgery—or even to skittles.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 15th, 1917. LEONARD WILLIAMS.

THE FUTURE OF THE POOR-LAW.

To the Editor of THE LANCET.

SIR,—To my letter in THE LANCET of Nov. 17th under this heading I have had 114 replies. The question I asked was: "Do you wish the Poor-law to be merged into the present or future Insurance Act?" Two only of my correspondents answer "Yes." I have had 400 replies to a previous questionnaire, all saying that they do not wish for the proposed absorption of their service. There are about 5000 Poor-Law medical officers, the majority of whom must wake up if the wishes of the service are to be stated at all adequately. So far 500 members are practically unanimously against the notion of absorption.

I am, Sir, yours faithfully,

A. WITHERS GREEN,
Honorary Secretary, Poor-law Medical Officers' Association.
Wardrobe-place, London, E.C. 4.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

David McM. Dickson to be temporary Surgeon.

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. F. F. Muecke relinquishes the acting rank of Lieutenant-Colonel on reposting.

Temporary Lieutenants to be temporary Captains: A. W. P. Fitz, J. Paterson, J. R. Fleming, D. O. Richards, W. C. P. Barrett, G. O'S. Waddington, T. P. Lineham, L. G. White, M. Golding, W. Simpson, J. B. Lester, V. C. Montgomery, A. H. Macklin, W. D. Kirkwood, F. A. Godson, E. W. Hall, J. J. O'Mullane, W. M. G. Guinness, B. G. H. Connolly, C. L. Warke.

Temp. Hon. Lieut. C. G. Hitchcock to be temporary honorary Captain.

Officers relinquishing their commissions: Temp. Capts. J. B. Scott (on appointment under the Ministry of National Service), F. A. Anderson, M.C., D. Macnish, P. M. Ragg, A. F. Elliott, A. Burns, C. W. Ensor, H. A. Cutler, W. Jameson, A. R. Muir, R. E. Thomas, T. Davidson, A. J. Couper, C. C. Bullmore, F. E. Wynne, E. J. Aveling, G. Pollock, F. J. McGlade, R. S. Jenkins, T. W. G. Hogg, L. J. H. Oldmeadow, J. E. R. Orchard, J. J. Anning, A. J. Anderson (on account of ill-health), G. B. Flux (on account of ill-health). Temp. Lieuts.: W. T. Morton, W. L. Walker, T. B. Stedman, J. B. McEwan, R. C. de C. Wheeler.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: R. V. Clarke, W. Yeoman, M. A. White, S. C. Swinburne.

TERRITORIAL FORCE.

Major G. Hall, C.M.G., is restored to the establishment.

Capt. (temp. Major, acting Lieut.-Col.) W. D. Sturrock reverts to the temporary rank of Major on ceasing to command a Field Ambulance.

Capt. J. Gracie is seconded.

Capt. C. A. Moore is seconded.

Capt. J. H. Baldwin resigns his commission on account of ill-health, and is granted the honorary rank of Captain.

TERRITORIAL FORCE RESERVE.

Surgeon Lieut.-Col. (Hon. Surgeon Col.) T. McC. Foley, from R.F.A., to be Surgeon Lieutenant-Colonel.

Col. S. S. Hoyland, from A.M.S., to be Colonel.

Lieut.-Col. E. J. Lawless, from Field Ambulance, to be Lieutenant-Colonel.

Lieut.-Colonel W. B. Cockill, from Casualty Clearing Station, to be Lieutenant-Colonel.

Lieut.-Col. W. S. Sharpe, from Field Ambulance, to be Lieutenant-Colonel.

Lieut.-Col. E. T. Collins, from Field Ambulance, to be Lieutenant-Colonel.

Major J. J. Cox, from General Hospital, to be Major.

Major R. Starkey-Smith, from Field Ambulance, to be Major.

Major C. E. Goddard, from Sanitary Company, to be Major.

The undermentioned officers from attached R.A.M.C.:—To be Major: Major R. E. Williamson. To be Captains: Capts. F. W. Goodbody, W. E. L. Elliott, and J. Wallace (from Field Ambulance).

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers:—London Regiment: Lieut.-Col. J. Goldiing (temporary Lieutenant-Colonel, A.M.S.). Royal Army Medical Corps: Lieut.-Col. E. T. Collins, Major (temp. Lieut.-Col.) A. F. Sweaney, Lieut.-Col. C. E. Humphreys, Major D. Walker, Major J. E. Bain, Major G. Wilson, Major A. Fowler, Lieut.-Col. L. W. Pockett.

MUNIFICENT GIFT TO CARDIFF MEDICAL SCHOOL.—Miss Talbot, of Margam Abbey, Port Talbot, Glamorgan, has presented £30,000 to the Welsh Medical School, Cardiff, for the foundation of a Chair of Preventive Medicine.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. J. Shannon, R.A.M.C., attached Yeomanry, qualified at Edinburgh in the early part of 1916, and joined up shortly afterwards.

Capt. J. A. Edmond, R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1910. After holding appointments at Guy's Hospital he practised at Catford, S.E.

Capt. A. Cowe, R.A.M.C., attached Lincolnshire Regiment, qualified at Edinburgh in 1913, and was in practice at Penicuik, Midlothian, prior to joining the R.A.M.C.

Capt. C. H. Robson, R.A.M.C., attached Gloucester Regiment, qualified at Durham in 1913, and was in practice at Whitley Bay, Northumberland, prior to joining up.

Died.

Capt. W. J. Corridon, Indian Subordinate Medical Department.

Missing.

Capt. F. B. Ryan, R.A.M.C., attached Royal Engineers.
Capt. F. M. Walker, M.C., R.A.M.C., attached Royal Horse Artillery.
Capt. D. R. Alexander, M.C., R.A.M.C., attd. Worcester Regt.
Capt. J. Davidson, R.A.M.C., attached K.R.R.C.
Capt. J. Ferguson, R.A.M.C., attached Liverpool Regiment.
Capt. C. R. Wills, R.A.M.C., attached Rifle Brigade.

Wounded.

Capt. A. J. McC. C. Morrison, R.A.M.C., attached Liverpool Regiment.
Capt. T. F. Craig, R.A.M.C.
Capt. W. Robertson, R.A.M.C., attached Duke of Wellington's Regiment.
Capt. J. N. Robins, R.A.M.C.
Capt. A. C. Ainsley, R.A.M.C., attached Yeomanry.
Capt. G. Allison, R.A.M.C., attached London Regiment.
Lieut.-Col. L. D. B. Cogan, M.C., R.A.M.C.
Capt. J. V. Cope, R.A.M.C., attached London Regiment.
Capt. D. J. Foley, R.A.M.C., attached London Regiment.
Capt. W. Fotheringham, R.A.M.C., attached London Regt.
Capt. P. J. Lane, M.C., R.A.M.C.
Capt. D. C. McArdle, R.A.M.C., attached London Regiment.
Capt. J. R. Tibbles, R.A.M.C., attached Buffs.
Capt. E. A. T. Green, R.A.M.C., attd. Seaforth Highlanders.
Lieut. B. Knowles, R.A.M.C., attached Middlesex Regiment.
Capt. W. S. Pickup, R.A.M.C., attd. Somerset Light Infantry.
Capt. F. P. Rankin, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. G. C. W. Harker, London Regiment, died from wounds, younger son of Dr. T. Harker, of Bournemouth, and late of Sydenham, London, S.E.

Lieut. C. Morse, Royal Engineers, killed in action, youngest son of Mr. T. H. Morse, F.R.C.S., of Deal.

Lieut. E. L. Naylor, South Staffordshire Regiment, elder son of Major A. J. Naylor, R.A.M.C., of Eltham, London, S.E.

THE HONOURS LIST.

The following awards to medical officers are announced. The acts of gallantry for which the awards were made are not yet published. All are members of the R.A.M.C. unless otherwise stated. The dates in parentheses, in those cases where bars have been awarded, refer to the number of THE LANCET in which a record of the original decoration will be found:—

Bar to the Distinguished Service Order.

Temp. Capt. (temp. Lt.-Col.) C. D. Pye Smith, D.S.O., M.C. (August 25th, 1917, p. 331).

Distinguished Service Order.

Temp. Capt. W. H. Lister, M.C.; Capt. W. H. Collins, Austr. A.M.C.; Major E. L. Hutchinson, Austr. A.M.C.; Major P. A. Maplestone, Austr. A.M.C.

Bar to the Military Cross.

Capt. R. T. Cæsar, M.C. (June 23rd, 1917, p. 969); Temp. Capt. J. M. Forsyth, M.C. (Sept. 30th, 1916, p. 620); Capt. C. Jacobs, M.C., Spec. Res. (July 28th, 1917, p. 136); Temp. Capt. D. H. Russell, M.C. (August 25th, 1917, p. 332); Temp. Capt. P. R. Woodhouse, M.C. (June 3rd, 1916, p. 1149).

Military Cross.

Temp. Capt. E. C. Abraham; Temp. Capt. W. R. Addis; Capt. M. T. Ascough; Lt. R. H. Baxter, New Zeal. M.C.; Temp. Capt. A. C. B. Biggs, attached Suff. Regt.; Temp. Capt. G. A. Birne; Temp. Lt. C. H. Booth; Temp. Capt. R. Briffault, attached York and Lanc. Regt.; Temp. Capt. G. E. Chissell; Temp. Capt. E. J. Clark, attached S. Staff. Regt.; Temp. Lt. A. P. Draper; Temp. Capt. F. P. Fisher; Temp. Capt. A. G. Forbes, S. Afr. M.C.; Capt. H. Foxton; Capt. R. D. Gawn; Capt. N. B. Graham, Spec. Res.; Lt. A. R. Hill, Spec. Res., attached Glouc. Regt.; Capt. W. P. Jepson, Spec. Res., attached Devon Regt.; Capt. F. W. Lumsden, New Zeal. M.C.; Capt. D. Macfadyen, Spec. Res.; Capt. H. A. Macmillan; Capt. J. McGhie, New Zeal. M.C.; Capt. J. McKay, Spec. Res., attached Bedf. Regt.; Temp. Surg. R. G. Morgan, R.M. Battn.; Capt. J. Pinder; Temp. Capt. C. L. G. Powell, attached E. Surrey Regt; Temp. Lt. (temp. Capt.) W. L. E. Reynolds; Capt. W. J. Scade, attached High. L.I.; Capt. S. L. Serpell, New Zeal. M.C.; Capt. C. N. Smith; Capt. W. L. Smith, Austr. A.M.C.; Temp. Capt. W. Steadman; Temp. Capt. F. N. Stewart; Temp. Lt. (temp. Capt.) R. I. Sullivan; Temp. Capt. N. C. Talbot; Capt. R. F. Walker, Spec. Res.; Temp. Capt. H. C. Watson; Temp. Lt. R. E. Whitting; Temp. Capt. F. E. S. Willis, attached Sea. Highrs.

THE FUTURE OF THE DISABLED SOLDIER.

In his very practical address on Technical Training for Disabled Soldiers and Sailors at the Royal Society of Arts on Dec. 12th Lord Charnwood began by summarising the numerical extent of the problem to be dealt with. After noting the fact that the total number of officers and men discharged from the Navy and Army as unfit for further service by the end of last September was about 225,000, he gave an analysis of the proportion of various kinds of disablement, which we reproduce here, as it is the basis on which any systemic solution of the problem must be built.

Number of Cases in Every 1000 Disabled Men (Excluding Officers) so far Discharged from Army or Navy During the War.

Cause of Disablement.

Injury to eyes (including an occasional case of total blindness)	32	Diseases of chest (including, say, 60 tubercular cases)	124
Amputation of leg	30	Rheumatism	50
Amputation of arm	19	Diseases of heart	110
Injury to leg not requiring amputation	121	Epilepsy	11
Injury to arm not requiring amputation	82	Nervous cases	47
Injury to hand not requiring amputation of whole hand	61	Insanity	9
Injury to head (including, say, six or seven paraplegic cases)	47	Deafness (partial or, in comparatively rare cases, total)	26
Hernia	7	Frost-bite (including cases of amputation, which are less than one-tenth of the whole)	10
Miscellaneous wounds and injuries (including, say, about five paraplegic cases)	53	Miscellaneous diseases (among which may be noted, besides a few paraplegic cases, Bright's disease, ulcer of stomach, debility, and varicose veins)	160
Total wounds and injuries	453	Total cases of disease	547

Total wounds and injuries and cases of disease 1000

Dealing with the opportunities provided for technical training, Lord Charnwood recalled the fact, on which it is impossible to lay too much stress, that in the experience of Pensions Committees there is as yet only a small proportion of disabled men willing to accept training, even when pressed upon them. This remains a disquieting feature of the problem. The broken man can, under the present abnormal labour conditions, find remunerative work of an unskilled nature, a blind-alley occupation which will inevitably land him in dire distress when the war is over and when the supply of undisabled and unpensioned soldiers, all wanting work, is unlimited. Lord Charnwood, therefore, rightly adjures Local War Pensions Committees not to work on routine lines, but to leave no stone unturned in insisting upon skilled training for their pensioners. We may recall that the Ministry of Labour has set apart special technical advisory committees to help the Pensions Committees in all such matters as the selection of candidates for training, the suitability of the training offered at technical schools and workshops, and on any other technical points which may arise. The student of the problem will also be greatly helped by a study of Dr. C. W. Hutt's "The Future of the Disabled Soldier,"[1] which has been written with the express object of preventing the degradation of the disabled soldier. In this book a full account is given of the training of the disabled man abroad and in the United Kingdom, and of the varying ways in which occupation may be adapted to physical defect. The subject is a tremendous and pressing one to which much attention will have to be given for years to come.

[1] London: Bale, Sons, and Danielsson: T. Fisher Unwin. 1917. Pp. 200. Price 6s. net.

OBITUARY OF THE WAR.

It is only a coincidence that in our obituary column this week occur the names of a member of the Canadian Army Medical Corps, of the Indian Medical Service, of the Royal Army Medical Corps, and of an assistant surgeon of the United States Navy. The individual loss of these men in the prime of life to their respective services and countries cannot now be fully estimated. They were all men of unusual brilliance and enterprise. But their chance association side by side in our obituary column is an example of the astonishing way in which the present war has brought together the medical profession of all English-speaking countries into a community of work and suffering which will, we believe, long outlast the occasion which produced it. From this free interchange of medical thought, and broadening of contemporary medical art and science which it will bring about all over the globe, great good must result.

DUDLEY W. QUEEN, M.D. LOUISVILLE,

ASSISTANT SURGEON, UNITED STATES NAVY.



Dr. D. W. Queen, who died at Queenstown, Ireland, on Nov. 19th at the age of 31 years, was a native of Texas, and graduated from the medical department of the University of Louisville, Kentucky, in 1912. After serving as resident medical officer at the Louisville City Hospital, he settled in private practice at Temple, Texas, where he held an appointment at The King's Daughters' Hospital. On May 5th, 1917, he was commissioned an assistant surgeon in the United States Navy. Surgeon Queen was unmarried.

WALTER LEONARD MACLEAN, M.D. NOVA SCOTIA,

MAJOR, CANADIAN ARMY MEDICAL CORPS.

Major W. L. Maclean, who was recently killed on active service at the age of 32 years, was a native of McLeod, Alberta, and second son of the Rev. J. Maclean, M.A., Ph.D. After taking the first year of an Arts course at the University of Manitoba, his father was transferred to Halifax, N.S., and he then entered the Dalhousie Medical School, graduating in 1908. After a year spent as house surgeon to the Victoria General Hospital at Halifax, he became assistant to the late Dr. R. H. McKeen, surgeon to St. Joseph's Hospital, Glace Bay, Cape Breton, whose large practice among the mining population was taken over when he died in 1912 by his three assistants—Dr. Maclean, Dr. Calder, and Dr. McCuish, whose death at the front was recorded in THE LANCET two weeks ago. Joining the C.A.M.C. in December, 1914, in the following February he came overseas as medical officer to a Canadian Artillery Brigade, and after a few weeks spent in England was sent to France to a Canadian Stationary Hospital, was transferred later to No. 1 Canadian General Hospital, and at the beginning of last year to a casualty clearing station. This hospital had recently been shelled, necessitating its withdrawal to a point further back. It was during this period, while temporarily attached to a British casualty clearing station, that he had just finished operating and was proceeding to the wards at 7 o'clock in the evening, when bombs were dropped upon the hospital from an aeroplane, and he received injuries from which he died within a few hours. One of Major Maclean's senior officers writes: "By his death Canada has lost one who, despite his youth, had accomplished remarkable work. By sheer capacity he rose to be head of the surgical service of a well-known casualty clearing station, and there he worked unremittingly. The pity is that no adequate record remains of his series of operations, more particularly of his results with grave abdominal wounds at the front, results which were very remarkable." Major Maclean leaves a widow, but no children.



AUSTIN EDMUND BASIL CLARKE, M.B., CH.B. ABERD.

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. E. B. Clarke, who was killed in action in France on Nov. 23rd at the age of 25, was elder son of the late Dr. Albert Bleckly Clarke, of Shebbear, North Devon. From Shebbear College he entered the University of Aberdeen, where he joined the O.T.C. and graduated M.B., Ch.B. in 1915. He at once obtained a commission in the R.A.M.C., and in July of the same year went to France as regimental surgeon to the Queen Victoria Rifles. In 1916 he was awarded the Military Cross for gallantry. He met his death from a shell which killed him instantaneously with three other officers. His colonel writes that he loved and was beloved by the men under his care.



Captain Clarke was a good all-round athlete and horseman, and had gained the first prize in a divisional steeplechase a few weeks before his death.

DAVID ARTHUR, B.SC., M.B., CH.B. GLASG.

MILITARY CROSS,

CAPTAIN, INDIAN MEDICAL SERVICE.

Captain D. Arthur, who died on July 31st at the age of 32 while a prisoner of war in Turkey, was youngest son of the late Provost Arthur, of Airdrie. He was educated at the Airdrie Academy and Glasgow University, where he graduated B.Sc. in 1905 and M.B., Ch.B. in 1907. After a short spell of general practice and filling a resident appointment at the Western Infirmary, Glasgow, he passed into the I.M.S. in 1909 and proceeded to India, where he was attached to the 8th Rajputs. A few days before the outbreak of war he had arrived home on a year's leave, but was at once sent back to India, whence he sailed for the Persian Gulf with the first Indian Expeditionary Force to that area. He took part in the landing at Mohamerah and after much arduous service, in the course of which he was twice mentioned in despatches, he went through the early



of Kut-el-Amara. At Ctesiphon he was wounded in the arm, back, and leg, but did not go on the sick list. On the fall of Kut he was taken prisoner, and later was put in medical charge of prisoners working on a section of the Bagdad Railway. While tending these patients he got his hand infected and died four days later at Entelli of septicæmia. While he was a prisoner the award of the Military Cross to him was published. Letters from fellow officers speak of Captain Arthur's social qualities. "Very good at his job and always cheery, he was a man with a great heart, and will be badly missed by all those that are left. In Kut he worked hard, and his cheery optimism and witty stories were invaluable." "Under the worst circumstances he saw a bright side, and always had a smile."

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

We have alluded in a leading article to the organised endeavour of the British Medical Association to support the War Emergency Fund of the Royal Medical Benevolent Fund in a further appeal. This energetic Fund by a first appeal raised £4000, while a second appeal brought a further £10,000. It is desired now to raise at least £30,000 more, and the British Medical Association has invited the secretaries of every division of the Association to make a combined effort towards this end. The War Emergency Fund was instituted to afford assistance to members of the medical profession who, in consequence of having joined the medical service of the Navy or the Army, find themselves involved in difficulties. Many of these men have had to face severe falls in income and to leave home without making adequate arrangements for the maintenance of their practices. There is no doubt of the real need for substantial sums to meet the indicated difficulties, and we have every confidence in the response that will be given by the divisions of the Association.

REGISTERED DENTISTS AND VOLUNTEER TRAINING.

A question has been recently asked in Parliament whether tribunals could, in granting exemption of registered dentists, impose the condition that they should join a Volunteer Training Corps. The answer given was that such a proceeding was not *ultra vires*, but that the condition should not be imposed unless it was clear that the man could spare the time and that his work would be in the national interest. It was also stated that owing to the demand for dental services it would be better, when possible and reasonable, that the imposed condition should take the form of requiring such additional dental service as might be recommended by the Dental Service Committee. The question raises an important principle—namely, whether manpower is or is not to be employed in the best possible way for national needs. The registered dentist of military age has passed through a curriculum which includes a considerable amount of medical and surgical instruction, and it is clear that to attach him to a Volunteer Training Corps as an ordinary infantryman is misapplication of skilled training. The right condition to impose is that suggested in the latter part of the answer—namely, to require of the exempted men additional public dental service. If this is not feasible, then any imposed condition should take the form of attaching him for service either to a military hospital or to the medical section of a Volunteer Training Corps.

VOLUNTARY CONSCRIPTION ON THE RAND.

A report has been presented by the Medical Services Committee appointed by the Witwatersrand branch of the British Medical Association to give effect to the principle of voluntary conscription adopted by the branch. Of the total 143 members of the branch 45 are now on military service, and another 30 had returned after a period of service. Of the 98 members not serving at the moment, a large proportion had offered their services, but with a third of the doctors away the extra burden thrown on those who remain is already considerable. The Director of Medical Services has arranged that, so far as possible, doctors invalided out of the service should replace those who are desirous of serving. As regards the actual numbers, 28 members are classified as unfit for service or cannot be spared; 16 are full-time officers, whose ability to get away depends on their employers or on ability to obtain a locum tenens; 21 are part-time officers, and the cases of 13 are being further considered. Most, if not all, of the other branches of the British Medical Association in South Africa are conducting a voluntary conscription campaign. The committee appeals to public authorities not to make permanent appointments during the war, but to fill them temporarily with men unfit for military service or discharged from such service. It is also urged upon those who manage the benefit societies in connexion with the mines that they should keep open the positions of their medical officers who had gone on active service.

Lieutenant-Colonel A. W. Sheen, who was the first officer in command of the Welsh Hospital at Netley, and who later went out to India in charge of a hospital at Deolali, has been appointed consulting surgeon to the war hospitals in India, with headquarters at Bombay.

THE ROYAL NAVAL HOSPITAL, STONEHOUSE.—Winter Villa, Stonehouse, has been lent to the Admiralty for the duration of the war. It is to be used as a hostel for the V.A.D. nurses who are working at the Royal Naval Hospital, and will be able to provide accommodation for about 70 nurses.

OFFICERS' CONVALESCENT HOME.—A convalescent home for British officers suffering from shell shock and nerve injuries was opened at "Westgate," Beckenham, on Nov. 15th, as a gift from the Dutch residents in this country. The first year's expenditure, amounting to £3000, has been guaranteed, and an appeal for further funds is being issued to Dutch residents in other countries. The honorary treasurer is Mr. J. van Maurik, 21, Bucklersbury, London, E.C.

ORTHOPÆDIC CENTRE FOR THE TREATMENT OF DISABLED SOLDIERS AND SAILORS IN EDINBURGH.—The Ministry of Pensions has now formally approved of the arrangement between the corporation of Edinburgh and the Joint Disablement Committee for South-East Scotland in connexion with the provision of an orthopædic centre at Tynecastle, Edinburgh, for the treatment of disabled soldiers and sailors. Tenders have been received for the erection of the new centre, and estimates amounting in all to £3393 9*s*. 6*d*. were accepted.

FIELD GLASSES FOR AMBULANCE WORK.—There is no doubt that the use of field glasses is a powerful factor in searching out and rescuing men who fall at a distance from the lines. Lady Roberts's appeal for support to her Field Glass Fund will not therefore fall on deaf ears as far as our readers are concerned. 30,000 instruments have been sent out, and the main expense is now in the repairing of glasses that come back for re-issue. Contributions, as well as any field glasses and telescopes that can still be spared, may be sent to the Manager, Lady Roberts's Field Glass Fund, 64, Victoria-street, London, S.W. 1.

COURT-MARTIAL ON AN OFFICER OF THE R.A.M.C.—At Victoria Barracks, Belfast, on Dec. 12th, a public court-martial was held on Captain J. S. Robinson, R.A.M.C., who was charged with neglect of duty because, on receiving a telephone message from the Midland Railway Station, Belfast, to the effect that the railway transport officer wanted him to send an ambulance for a man (a soldier) who was being transferred from Belfast to the hospital at Londonderry, and who was ill and was lying down, he (Captain Robinson) neither sent an ambulance nor went to see the man. For the defence, it was proved that Captain Robinson, when the telephone message came, attended to it—though it was no part of his duty to do so—and told the railway transport officer that if he was not satisfied to give him a ring later, and an ambulance would be sent. He did not consider it necessary to make any report about the matter, as the statement of the railway transport officer was not inconsistent with the diagnosis. The soldier died of acute pancreatitis—this was revealed at the autopsy. The court returned a verdict of "Not guilty," and in ordering the release of Captain Robinson the President congratulated him upon the result of the inquiry.

THE LANCET, VOL. II., 1917: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 29th will be ready early in the New Year. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF OXFORD.—At examinations for the degree of Bachelor of Medicine, held recently, the following candidates were successful in the subjects indicated:—

FIRST EXAMINATION.

Organic Chemistry.—J. A. Barnett, Corpus Christi; C. C. H. Chavasse, Hertford; C. R. Lane, Pembroke; H. A. Osborne, New College; and I. M. Sidley, Christ Church. Women: N. E. Bodkin and D. J. Collier, Society Oxford Home Students; D. W. Crook and K. M. Hodgkinson, Somerville College; J. Orr-Ewing, Lady Margaret's Hall; and C. M. Ottley, Society Oxford Home Students.

Human Anatomy and Human Physiology.—J. Harris, Jesus; and W. S. Tunbridge, Lincoln.

SECOND EXAMINATION.

Materia Medica and Pharmacology.—F. G. Hobson, New College; H. P. Hodge, non-collegiate; E. G. T. Liddell, Trinity; and W. V. Robinson, New College.

Pathology.—E. H. Cluver, Hertford; F. G. Hobson, New College; C. F. Krige, Hertford; W. V. Robinson, New College; E. A. Thomas, University College; and E. A. Woods, Magdalen.

Forensic Medicine and Public Health.—C. W. W. Armstrong, St. John's; W. Gover and R. T. F. D. Roberts, Balliol; G. K. Stone, Trinity; H. W. Toms, Jesus; B. Tordoff, St. John's; and E. A. Woods, Magdalen.

Medicine, Surgery, and Midwifery.—C. W. W. Armstrong, St. John's; F. B. Dutton, Magdalen; W. Gover, Balliol; R. M. Humphreys, St. John's; R. T. F. D. Roberts, Balliol; and G. K. Stone, Trinity.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Dec. 13th, Mr. Charters J. Symonds, the Senior Vice-President, being in the chair.—A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, stating that at the recent examination there were 25 candidates, of whom 12 were approved.—A report was read from the Court of Examiners relating to the recent examination for the Fellowship; it stated that there were 13 candidates and that of these only one acquitted himself satisfactorily. The Council resolved to issue a Diploma of Fellow to the successful candidate, Hugh Ernest Griffiths, St. Bartholomew's Hospital. The Diploma of Member was conferred upon Thomas Pomfret Kilner, Manchester University. Licences to practise dentistry were conferred upon the following 22 candidates who have passed the requisite examinations and have complied with the by-laws:—

Kenneth Charles Brough and Malcolm Beverley Burton, Guy's Hospital; Alfred Innes Cox, Middlesex and Royal Dental Hospitals; Peter Jacob Stephanus de Wet, Guy's Hospital; Francis Desmond Donovan, Middlesex and Royal Dental Hospitals; Hyman Fox, Guy's Hospital; Blanche Sutton Gardner, Royal Free and National Dental Hospitals; Philippus Elisa Grobbelaar, Guy's Hospital; Hugh Donald Hoggard, Middlesex and Royal Dental Hospitals; James Ernest Horton, London Hospital; John Christopher Johnson, Hugh Llywelyn Jones, and Felix Reginald Knowler, Guy's Hospital; Stephen Alphonsus McCormack, Middlesex and Royal Dental Hospitals; Georges Maes, Brussels and Royal Dental Hospital; Herbert Myers Marshall, Harry Millett, and Edward Alfred Penney Parker, Guy's Hospital; Ernest George Parkinson, Manchester University; Clarence Norman Pearson, London Hospital; Sydney Kilshaw Rigg, Bristol University; and George Wilshere, Guy's Hospital.

The Senior Vice-President reported that he had attended in the theatre of the College on Nov. 15th at 3 o'clock, and that as the required quorum of 30 was not present he had declared, after the expiration of 15 minutes, that the meeting could not be held.—The Senior Vice-President reported the delivery by Sir John Bland-Sutton on Nov. 8th of the Bradshaw Lecture on "Misplaced and Missing Organs." The best thanks of the Council were given to him for his lecture and he was requested to publish it.—The secretary reported that Corporal Henry Brightwell, R.A.M.C., who was an attendant in the museum from 1900 to 1915, and who enlisted early in 1915, had died of cholera on board H.M. Hospital ship *Devanha* on Nov. 4th. The Council decided to express their condolences to the widow and directed that the deferred allowance standing to the credit of her husband in the books of the College should be paid to her.—Sir Berkeley Moynihan was appointed a member of the Court of Governors of the University of Birmingham for a period of three years in the vacancy occasioned by the retirement of Sir W. Watson Cheyne. Mr. D'Arcy Power was appointed a member of the Court of the University of Bristol in the vacancy occasioned by the expiration of the period of office of Sir Rickman J. Godlee. Mr. W. G. Spencer was appointed a member of the Central Council of District Nursing in the vacancy occasioned by the retirement of Sir Alfred Pearce Gould.—A letter was read from Mr. H. J. Waring reporting the proceedings of the General Medical Council at their recent session. The best thanks of the Council were given to Mr Waring for his services as the representative of the College and they directed that his letter should be entered on the minutes.

ROYAL INSTITUTION OF GREAT BRITAIN.—A series of Christmas lectures, adapted to a juvenile audience and entitled "Our Useful Servants: Magnetism and Electricity," will be delivered by Professor J. A. Fleming, D.Sc., F.R.S., M.R.I., on Thursday, Dec. 27th, and Saturday, Dec. 29th, at 3 o'clock.

READING PATHOLOGICAL SOCIETY.—This society, one of the oldest medical associations in the United Kingdom, has decided *nemine contradicente* to admit women practitioners to membership, thereby reversing the decision arrived at on former occasions when such a proposal was mooted.

LIVINGSTONE COLLEGE.—The annual report of Livingstone College shows that 1500 patients have been admitted since the institution was turned into an auxiliary of the Bethnal Green Military Hospital in August, 1915. The hope is expressed that the lessons gained in solving the problem of emergency hospital training may give fresh stimulus to the elementary medical training for missionary work, which is the normal occupation of the college.

THE ROYAL SANITARY INSTITUTE AND A MINISTRY OF HEALTH.—At a special meeting of the council of the Royal Sanitary Institute (90, Buckingham Palace-road, London, S.W. 1), called to consider the proposals made for the formation of a Ministry of Health, a resolution was passed directing attention to the fact that any scheme affecting so many interests and authorities demands very full consideration, and offering the coöperation of the council of the Institute in the preparation of legislation. As long ago as 1883 the Sanitary Institute had under consideration proposals for collecting all public health work under one Government department.

INFANT WELFARE IN IRELAND.—The sixth of the lectures on infant welfare (the first series to be given in Ireland) was delivered in the Central Public Library, Belfast, on Dec. 11th by Dr. R. J. Johnstone on the Choice and Care of Parents. In presiding, Dr. E. C. Bagge, Medical Commissioner to the Local Government Board for Ireland, spoke of the importance of these lectures, which were given under the auspices of the local authorities in Ireland. He said that he looked forward with high expectations to the new franchise, believing that the women would give a grand impetus to child welfare.

CARE OF DISABLED IN SOUTH-EAST SCOTLAND.—A meeting of the Joint Disablement Committee for South-East Scotland was held recently at the City Chambers, Edinburgh, Bailie Adams presiding. The Joint Committee approved the arrangements for the establishment of Craigend, Liberton, as a hospital for the treatment of neurasthenics. Exception was taken to the provision of the Institutional Committee that it was to be reserved for acute cases, and it was agreed to make a representation on the subject to the institutional Committee. It was also intimated that the Ministry of Pensions had made an application for release from the Army of Dr. R. Cunyngham Brown, Deputy Commissioner of the Board of Control, for the purpose of taking up the position of medical superintendent of the hospital, and the military authorities had agreed to his release. The Institutional Committee have indicated that men will be admitted only on the recommendation of the Medical Board for Neurasthenia presided over by Lieutenant-Colonel Macpherson. The Joint Committee also approved of the scheme for the establishment of an epileptic colony at Muireston, let of which, including mansion house, steading, and land, has been arranged with the Distress Committee of Edinburgh for a period of ten years at £200 per annum.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 12TH.

Physical Capacity of Indian Garrison Troops.

Mr. NIELD asked the Under Secretary for War whether he was aware that considerable differences of opinion existed between the local Indian military authorities and the officers commanding battalions sent out in India for garrison duty to replace troops withdrawn for active service in the field as to the physical capacity of many non-commissioned officers and men in such substituted battalions who were suffering from (*inter alia*) v.d.h., rupture, varicocele, chronic bronchitis, asthma, rheumatism, and frost-bite, to perform in India the ordinary duties of Native garrison battalions or sound and seasoned European troops; and whether any commanding officers had been removed from their command because of their action in limiting the duties of such substituted battalions to work which their physical condition would allow them to perform having regard to the climate.—Mr. MACPHERSON answered: So far as my information goes the answer to both parts of the question is in the negative. I should, however, be glad to receive any information which the honourable gentleman may have in his possession.

Grants to Voluntary Hospitals.

Sir WILLIAM COLLINS asked the Financial Secretary to the War Office whether he was now in a position to state what increases in the scales of grants to voluntary hospitals in respect of treatment of wounded soldiers had been decided upon.—Mr. FORSTER: The maximum grant for Class A Auxiliary Hospitals has been raised from 3*s.* to 3*s.* 3*d.*, and for Class B from 2*s.* to 2*s.* 6*d.*

British and Turkish Prisoners.

Answering Mr. HUME-WILLIAMS, Mr. JAMES HOPE (representing the War Prisoners Department) stated that the conference in Switzerland between Turkish and British representatives with reference to a suggested exchange of prisoners was now sitting, and he trusted that a satisfactory solution might be arrived at. He was not, however, yet in a position to make any statement on the subject.

THURSDAY, DEC. 13TH.

Milk for Infants.

Mr. WHITEHOUSE asked the Parliamentary Secretary to the Ministry of Food whether, in arranging for the more equitable distribution of milk, he had considered the numerous cases where it was necessary to feed young infants wholly upon cow's milk; and whether he could state the approximate cost, at present rates, of the milk requisite for an infant who had to be thus fed.—Mr. CLYNES said in reply: Food control committees are empowered to give priority to any consumers in their area. The cost of the milk required for a child depends upon the age of the child and upon the sale price of milk, which is fixed by the local food control committees and varies at the present time from 5*d.* to 8*d.* a quart.

Middlesex Practitioners and Invalided Soldiers.

Major NEWMAN asked the representative of the National Insurance Commissioners whether he could state the number of Middlesex panel practitioners who had notified their respective Insurance Committees that they were not prepared to accept invalided seamen, marines, and soldiers on their lists under the terms of the new regulations.—Sir EDWIN CORNWALL answered: I am not aware of any medical practitioner in Middlesex having refused to render treatment in any such case. I may add that the regulations in question are framed in accordance with the express desires of authorities representative of the medical practitioners concerned, and that events subsequent to their issue have shown that the regulations are, in fact, acceptable to the great majority of such practitioners.

Transfer of Prisoners to Holland.

Mr. HUME-WILLIAMS asked the representative of the War Prisoners Department whether he could make a statement with reference to the expected arrival of British prisoners in Holland under the recent agreement entered into with Germany at The Hague.—Mr. JAMES HOPE said in reply: We have just heard that it is proposed to effect the first transfer of British prisoners to Holland on Jan. 2nd. We have no reason to suppose that any further obstacle will arise.

Mr. BUTCHER: Will the first transfer be of civilian prisoners, and will that be followed by military prisoners?—Mr. HOPE: I understand the first transfer is to be between civilians and a certain number of wounded and other officers.

Sufferers from Leprosy.

Colonel YATE asked the President of the Local Government Board how many cases of leprosy there were in this country; and whether steps were being taken to segregate persons suffering from leprosy and to provide for their treatment and maintenance.—Mr. STEPHEN WALSH (Parliamentary Secretary to the Local Government Board) replied: My right honourable friend has no exact information, but he is informed that there are only a few cases of leprosy in the country, and, so far as he is aware, the disease is not spreading here. My right honourable friend is advised that the infectivity of the disease is very limited, and that measures for the compulsory segregation of persons suffering from leprosy in this country would not be justified at present. He understands that valuable work in the treatment and maintenance of such cases is being done by private funds.

Colonel YATE: Would it not be advisable for the Government to give some help to those charitable institutions?

Mr. TENNANT: Is not this one of the notifiable diseases?

Mr. WALSH: Yes, I think so, but I am not quite certain on the point. There are three or four extremely valuable organisations dealing with this work, and so far as the Department is aware, there is no special need of Government assistance. The work is being extremely well done, and there are very few cases indeed. Should the necessity for Government assistance arise, it will be a matter for future consideration.

Colonel YATE: Would it not be advisable that these men should be compulsorily put into these charitable institutions?

Sir WILLIAM COLLINS: Is there not high authority for the opinion that while leprosy may be regarded as an inoculable disease, it is not in the ordinary sense of the word communicable?

Mr. WALSH: That is already in the answer. We are advised that the infectivity of the disease is very limited.

Welfare of the Blind in Ireland.

Answering Mr. P. MEEHAN, Mr. DUKE, Chief Secretary for Ireland, stated that he was in communication with the President of the Local Government Board with reference to the appointment of an advisory committee in Ireland in connexion with carrying out the recommendations of the Departmental Committee on the Welfare of the Blind.

BOOKS, ETC., RECEIVED.

BALE, JOHN, SONS, AND DANIELSSON, London.
Laboratory Studies in Tropical Medicine. By C. W. Daniels, M.B. Camb., F.R.C.P. Lond., and H. B. Newham, M.D. Dub., D.T.M. & H. Camb. Fourth edition, thoroughly revised. 21*s.* net.

CHURCHILL, J. AND A., London.
Treatise on Applied Analytical Chemistry Methods and Standards for the Chemical Analysis of the Principal Industrial and Food Products. By Professor Vittorio Villavecchia, with the collaboration of Others. Translated by T. H. Pope, B.Sc., A.C.G.I., F.I.C. Vol. I. 21*s.* net.
Quantitative Chemical Analysis Adapted for Use in the Laboratories of Colleges and Technical Institutes. By F. Clowes, D.Sc. Lond., and J. B. Coleman, A.R.C.Sc., Dublin. Eleventh edition. 12*s.* 6*d.* net.
Therapeutic Immunisation: Theory and Practice. By W. M. Crofton, M.D. 7*s.* 6*d.* net.
Materia Medica, Pharmacology, and Therapeutics. By W. Hale White, M.D. Lond., M.D. Dub., Lieutenant-Colonel, R.A.M.C. (T.). Sixteenth edition. 7*s.* 6*d.* net.
Reagents and Reactions. By Edgardo Tognoli. Translated from the Italian by C. A. Mitchell, B.A., F.I.C. 6*s.* net.
A Short Practice of Midwifery Embodying the Treatment Adopted in the Rotunda Hospital, Dublin. By Henry Jellett, B.A., M.D. Dub., F.R.C.P.I. With a Preface by Sir W. J. Smyly, M.D., F.R.C.P.I. Seventh edition, revised. 12*s.* 6*d.* net.
Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXXVII. Session 1917, with List of Officers, Members, &c. 12*s.* 6*d.* net.
Year Book of Pharmacy. Edited by J. O. Braithwaite and Others.

"DAILY POST" PRINTERS, Liverpool.
Orígenes y Tendencias de la Eugenia Moderna. By Joaquin Bonilla. 3*s* 6*d.* net.

HODDER AND STOUGHTON, London.
Munition Lasses. By A. K. Foxwell, M.A., D.Litt. 1*s.* 3*d.* net.
Women of the War. By the Hon. Frances Maclaren. 3*s.* 6*d.* net.

HOEBER, PAUL B., New York.
Radium Therapy in Cancer at the Memorial Hospital, New York (First Report, 1915-1916). By H. H. Janeway, M.D., with the Discussion of Treatment of Cancer of the Bladder and Prostate by Benjamin S. Barringer, M.D., and an Introduction upon the Physics of Radium by Gioacchino Failla, B.E., A.M.

KIMPTON, HENRY, London.
Asthma Presenting an Exposition of the Non-passive Expiration Theory. By Orville H. Brown, A.B., M.D., Ph.D. With a Foreword by George Dock, Sc.D., M.D.

LEWIS, H. K., AND CO., London.
Diagnosis and Treatment of Heart Disease: Practical Points for Students and Practitioners. By E. M. Brockbank.
Theory and Practice of Massage. By Beatrice M. Goodall-Copestake. 8*s.* 6*d.* net.

LIBRAIRIE J. B. BAILLIÈRE ET FILS, Paris.
Chirurgie de Guerre (Chirurgie d'Urgence, Chirurgie Réparatrice et Orthopédique). Par le Dr. Mauclaire. 16 fr.

LIPPINCOTT, J. B., Co., London and Philadelphia.
The Battle with Tuberculosis and How to Win It: A Book for the Patient and his Friends. By D. MacDougall King, M.B. 6*s.* net.

LONGMANS, GREEN, AND CO., London.
Chemical Composition of the Proteins. By R. H. A. Plimmer, D.Sc. Part I., Analysis. 16s. net.

MACMILLAN AND CO., London.
Immortality. An Essay in Discovery Coördinating Scientific, Psychical, and Biblical Research. By Burnett H. Streeter, A. Clutton-Brock, C. W. Emmet, J. A. Hadfield, and the Author of "Pro Christo et Ecclesiâ." 10s. 6d. net.

MASSON ET CIE, Paris.
Plaies de la Plèvre et du Poumon. Par R. Grégoire, Professeur Agrégé à la Faculté de Paris, Chirurgien des Hôpitaux; et A. Courcoux, Médecin des Hôpitaux. (Collection Horizon.) 4 fr.

METHUEN AND CO., LIMITED, London.
The Baby. By Arthur Saunders, M.A., M.B. Oxon., D.P.H. Oxon., F.R.C.P. Lond. 1s. 3d. net.

PRESS PUBLISHING COMPANY, East Stroudsburg, Pa., U.S.A.
St. Luke's Hospital Medical and Surgical Reports. Vol. IV. 1917.

Appointment.

MODY, G. T., M.B., B.S., has been appointed House Surgeon to the Royal Eye Hospital, Southwark, London.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNSLEY, BECKETT HOSPITAL.—Second Female House Surgeon. Salary £225 per annum, with board, &c.
BEDFORD COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £174 10s. per annum. Also House Physicians. Salary £152 10s. per annum, with board, &c.
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KINGSTON-UPON-HULL, CITY AND COUNTY OF.—Resident Medical Officer. Salary £400 per annum, with board, &c.
MANCHESTER ROYAL INFIRMARY (CENTRAL BRANCH).—Resident Surgical Officer. Salary £200 per annum.
QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Temporary Assistant Physician. Salary at rate of £12 10s. for one attendance per week.
ROCHESTER, KENT, ST. BARTHOLOMEW'S HOSPITAL.—Senior Resident House Surgeon. Salary at rate of £300 per annum, with board, &c.
SALOP COUNTY COUNCIL.—Temporary Assistant School Medical Officer. Salary at rate of £400 per annum.
UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—Temporary Lecturer in Physiological Chemistry. Salary at rate of £200 per annum.
WALSALL AND DISTRICT HOSPITAL.—Female Senior House Surgeon. Salary £250 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

BAYLEY.—On Dec. 7th, at Albert-road, Regent's Park, the wife of Captain H. H. R. Bayley, R.A.M.C., of a daughter.
KEELING.—On Dec. 16th, at Attleborough, Norfolk, the wife of G. S. Keeling, M.D., of a son.
MACFIE.—On Dec. 13th, at Newcastle-on-Tyne, the wife of Captain R. Bute Macfie, R.A.M.C., of a daughter.
MARTYN.—On Dec. 10th, at Netherclay House, Bishops Hull, near Taunton, the wife of Captain V. C. Martyn, M.C., R.A.M.C., of a son.

MARRIAGES.

GRIFFITH—RUCK.—On Dec. 6th, at Holy Trinity Church, Corris, Major Alexander Hill Griffith, R.A.M.C. (T.), to Mary Ursula, second daughter of Lieutenant-Colonel A. A. Ruck, late 8th The King's Regiment, and Mrs. Ruck, of Esgair, Pantperthog, Merioneth.

DEATHS.

ANDERSON.—On Dec. 17th, at Alde House, Aldeburgh, Suffolk, Elizabeth Garrett Anderson, M.D., aged 81. Funeral Friday, 21st Dec., 2.30 P.M., Aldeburgh. Memorial service at Christ Church, Endell-street (Military Hospital), on Saturday, 22nd Dec., at 11 A.M. No flowers by request.
EDMOND.—On Dec. 1st, killed in action, John Adamson Edmond, M.B., B.S., M.R.C.S., L.R.C.P., Captain, R.A.M.C.
GRIFFITHS.—On Nov. 30th, killed in action, John Neville Griffiths, M.B., D.P.H., temporary Captain, R.A.M.C., aged 36.
SHARLAND.—On Dec. 14th, Dr. Arthur Sharland, Charleville-circus, Sydenham, in his 69th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

BOOKS OF REFERENCE.

THE aim of Sir Henry Burdett's well-known compilation, *Burdett's Hospitals and Charities, 1917* (London: The Scientific Press, Limited. Pp. 1074. Price 12s. 6d. net, is given on the title-page as follows: "Being the year book of philanthropy and the hospital annual containing a review of the position and requirements, and chapters on the management, review, and cost of the charities. An exhaustive record of hospital work for the year. It will also be found to be the most useful and reliable guide to British, American, and colonial hospitals and asylums, medical schools and colleges, nursing and convalescent institutions, consumption sanatoria, religious and benevolent institutions, and dispensaries." And we reproduce it here because the compiler, who is now completing the fiftieth year of his work for hospitals, is seeking someone technically and otherwise competent and willing to coöperate in editing the year-book. We congratulate Sir Henry Burdett upon his twenty-eighth edition, delayed as it has been by the grave difficulty of collecting reliable statistics in war time, and we wish him well in finding a worthy successor.

A CURIOUS ACTION OF MERCURY ON ALUMINIUM.

To the Editor of THE LANCET.

SIR,—The enclosed letter which I received from Dr. G. T. Western may be of interest. It gives more complete information on the subject than I have found elsewhere. The authorities seem to be agreed that moisture is an essential part of the reaction, and the formula given by Dr. Western seems plain enough:—

$$2Al + Hg + 3H_2O = Al_2O_3 + 6H + Hg.$$

Presumably when corrosive sublimate is used in place of metallic mercury the formula would read:—

$$2Al + 3HgCl_2 + 3H_2O = Al_2O_3 + 6HCl + 3Hg,$$

hydrochloric acid being formed in place of pure hydrogen, and it may be that the irritating quality noticed by me is due to the fumes of nascent HCl. It is curious that both Captain M. H. Fleming (THE LANCET, Dec. 15th) and myself thought that the reaction took place better in the absence of moisture, and I at any rate have noticed no sign of metallic mercury in the residue, the aluminium being apparently eaten away, as it might be by a corrosive acid.

I am, Sir, yours faithfully,
Bromsgrove, Dec. 16th, 1917. H. CAMERON KIDD.

[ENCLOSURE.]

29, Nottingham-place, W. 1, Nov. 28th, 1917.

DEAR SIR,—The phenomenon you describe in THE LANCET interested me, in so far as I also observed it some years ago by chance in a similar manner to you. At the time I investigated the matter and found that the mercury forms an amalgam with the aluminium. In the presence of moisture katalytic action then takes place thus:—

$$2Al + Hg + 3H_2O = Al_2O_3 + 6H + Hg.$$

If you allow the action to take place in water under an inverted tube you will collect pure hydrogen, the Hg going on to the next layer of aluminium, and the process continues until the aluminium is completely eaten away, and whereas you commenced with $HgCl_2$ you finish with a small bead of metallic mercury. You may equally well commence the process with metallic mercury. This phenomenon was exploited five or six years ago in a toy—a man's face stamped out of sheet aluminium and painted except the chin and eyebrows. A small pencil was supplied made of a mercury amalgam. This was then rubbed on the chin and eyebrows, and the beard and eyebrows were made to grow.—I remain, yours faithfully.
Dr. H. Cameron Kidd. G. T. WESTERN.

ANAPHYLACTIC DRUG REACTIONS.

AT Professor Lewandowsky's dermatological clinic in Berlin Dr. W. Lutz has shown good reason for thinking that the febrile reaction, sometimes accompanied by skin eruption, following on a second intravenous injection of salvarsan or of quinine, is really an allergic reaction of the same nature as so-called serum disease. His reasons are set out in the *Correspond.-bl. f. Schw. Ärzte* for Dec. 1st.

SLAUGHTER-HOUSE REFORM.

WE have often urged the importance of applying a sound standard of sanitation to slaughter-houses, and at a time when our meat-supply is curtailed the swift and wholesome preparation of carcasses is doubly important. The best and most humane methods of killing animals are dealt with in a pamphlet compiled by Mr. S. M. Dodington for the Council of Justice to Animals (21A, Savile-row, London, W. 1. Price 1s.). It sets out in tabular form the progress of the movement in favour of more humane methods in killing animals used for food in the northern countries of Europe and in parts of England. A general review of slaughter-house hygiene, including references to many of the articles which have appeared in our columns, will be found in THE LANCET, 1909, ii., 495.

DEATH-RATE IN THE FIJI ISLANDS.

THE report for 1916 of the medical department of the Fiji Legislative Council, signed by the chief medical officer, Dr. G.W. A. Lynch, shows the same striking decrease in the death-rate of all sections of the population which is apparent in other parts of the Empire. In a scattered colony where registration is not yet perfect the figures as given are not claimed to possess absolute accuracy; but the steady decline in the yearly rates since 1912 is encouraging, and the present rate is a very low one for a tropical country.

Race.	1912. Per 1000.	1915. Per 1000.	1916. Per 1000.
Europeans	10·5	9·1	7·9
Fijians	31·3	28·3	25·1
Indians	16 5	10·6	8·7
All races	24·6	20·4	17·5

It should be added that the birth-rate has also declined, although not in the same ratio.

THE STUDY OF ENVIRONMENT.

OPPORTUNITIES in the past for the study of the social factor in disease have not been too abundant for the medical student, and the Student Christian Movement is proposing to supply the need in a Social Study School for Medical Students, to be held at Mansfield House, Canning Town, London, E., from Jan. 4th–7th next. The express purpose of the school is to put before medical students the extent and gravity of the problems of poverty, their relations to one another, and effect on health and character. Visits to factories, docks, and street markets have been arranged, and addresses on various social subjects will be given by Mr. P. I. Watkin, Dr. Jane Walker, Mr. Harry Roberts, Dr. Sidney Davies, and Dr. S. R. Gloyne. A charge of £1 5*s*. covers board and lodging at Mansfield House, and application for registration should be made to Mr. Hugh Martin, M.A., Annandale, North End-road, London, N.W. 3.

MEDICAL INVENTORS.

Dr. S. D. Clippingdale writes: The interesting list of medical inventors you give in your issue of Dec. 15th (p. 916) is capable of expansion:—

Peter Chamberlen, inventor of the midwifery forceps, who had a craze for inventing, produced the following: (1) carriages to go without wheels; (2) an apparatus for navigating vessels in a straight line in all winds; (3) a form of printing which would "represent to the eye what sound does to the ear"; (4) a reformed orthography of the English language.

Dr. Timothy Bright, in 1588, invented shorthand.

Sir William Petty, Charles II.'s physician, invented a boat with two keels, an invention which excited the risibility of both the king and Pepys the diarist. N.B.—It was Petty's daughter who, by marrying into the Lansdowne family, brought into that family the only wisdom it ever possessed (according to the family historian, Lord Edmund Fitz-Maurice).

Dr. John Allen, of Bridgwater, obtained in 1730 letters-patent for three inventions—viz., (1) a method for navigating a vessel in a calm, (2) an engine for raising water by means of fire, (3) a new method of drying malt. He also invented a chariot upon steel springs which could travel "sixty miles a day without being overturned."

Dr. David Bridges, of Hull, invented (*circa* 1780) spermacetti candles.

Dr. Neil Arnott, about 1832, invented the water-bed, a ventilating chimney, and a smokeless grate.

Dr. Battie, of Marlow, introduced traction of barges by horses instead of by men. In building his own house, however, Dr. Battie forgot the staircase!

Dr. Richard Gatling, in 1861, invented the Gatling gun.

Dr. Joseph Ignatius Guillotin is said to have invented the decapitating instrument which bears his name.

Lastly, "*Francis Moore, Physician*," was the orginator of that prescient periodical, "Old Moore's Almanack."

COMMENDABLE HYGIENE.

A WORD of acknowledgment is due to the authorities of the London Underground system of railways for their promptitude in making their stations clean and sweet after use as air-raid shelter.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS IN THE UNITED STATES.

Messrs. Wm. Wood and Co., of New York, are relinquishing their Agency for the supply of THE LANCET in the United States at the end of the present year. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

The following journals, magazines, &c., have been received:—Medical Journal, Archives of Internal Medicine, Medical Journal of South Africa, Quarterly Journal of Microscopical Science, British Dental Journal, American Journal of Obstetrics, Bulletin of Johns Hopkins Hospital, London Hospital Gazette, Indian Medical Gazette.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 18th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Dec. 12	...	42	40	35	33	35	Overcast
,, 13	...	56	50	38	42	43	Overcast
,, 14	...	60	52	43	48	50	Overcast
,, 15	...	58	44	40	36	40	Fine
,, 16	...	47	46	40	36	40	Cloudy
,, 17	0·24	47	37	37	32	37	Cloudy
,, 18	...	48	37	36	32	37	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. E. Arnold, Lond.; Dr. W. D. Anderson, Carlisle; Mr. R. J. Albery; Admiralty, Medical Dept. of, Director-General of; Messrs. Claudius Ash, Sons, and Co., Lond.; Australian Book Co., Lond.; Mr. C. W. Allen, Lond.

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U.—University of London Press, U.S. Naval Medical School, Washington, D.C.

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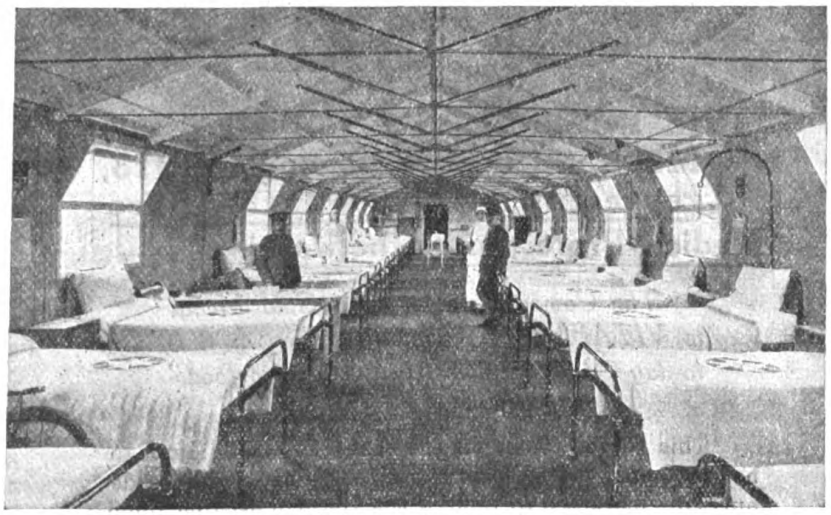
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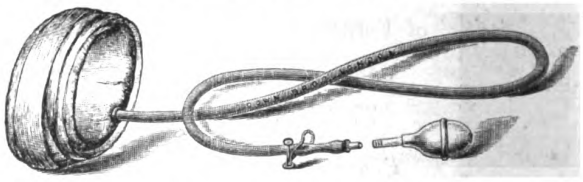
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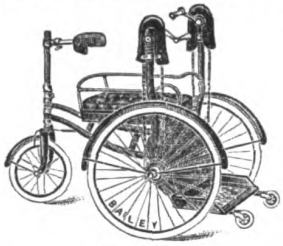
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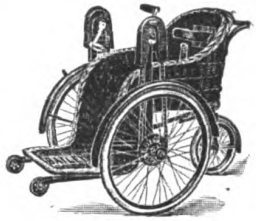
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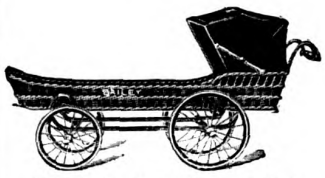
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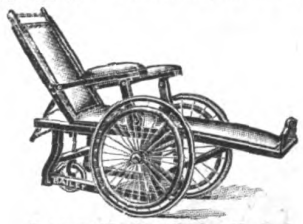


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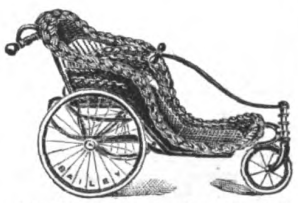
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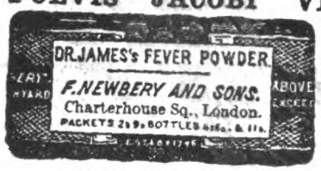
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Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.

Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—
LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.
MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.
Other days by appointment.

Visiting and Consulting Physicians { Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. H. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.
Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.



NORTHWOODS HOUSE
WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary.
Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.

NORTHUMBERLAND HOUSE,

Telegrams: "SUBSIDIARY, LONDON." GREEN LANES, FINSBURY PARK, N. Telephone: No. 838, North.

(Established 1814.)

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.
Six acres of ground, highly situated, facing Finsbury Park.
Voluntary Boarders received without certificate. Seaside Branch at Worthing.
For particulars, apply to the RESIDENT PHYSICIAN.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES,

(Formerly the EARLSWOOD ASYLUM.)

REDHILL, SURREY.

R. C. P. HULL, Esq., J.P., Treasurer.

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION, and needing SPECIAL TRAINING in useful occupations. SCHOOLS, FARMING, and various TRADE WORKSHOPS.

SELECTED CASES admitted on reduced inclusive fees. THOSE UNABLE TO PAY admitted by votes of Subscribers, with part-payment towards cost.

RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14-16, Ludgate Hill, E.C.4.
Telephone: Redhill 344. Telephone: City 5297.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576.

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

GHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

Mr. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

Close this Sanatorium till after the War.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

MATLOCK SANATORIUM

Situated on the edge of the mountain limestone area of Derbyshire, over 700 feet above sea-level. The buildings face south and command beautiful views, while on the north and east they are sheltered by lofty hills. The surrounding country is well known for its great beauty and interest. The climate is dry and bracing. The buildings are lighted by electricity and heated by radiators.

Treatment is carried out on modern lines, all special methods being available in suitable cases. A new X-ray apparatus has been installed, and there is a complete equipment for the carrying out of up-to date methods in all Tubercular and other Pulmonary cases.

For particulars apply to FREDERICK KINCAID, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire. Telephone and Telegraph: SANATORIUM, MATLOCK 22.

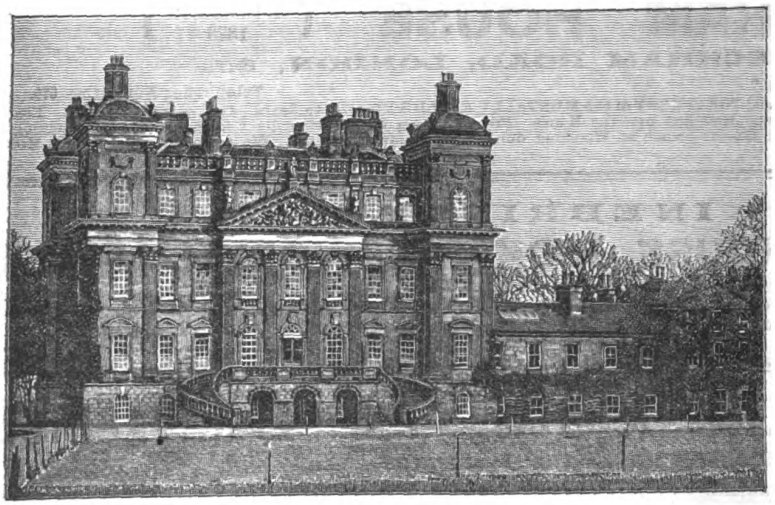
VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales



DUFF HOUSE, BANFF, SCOTLAND.

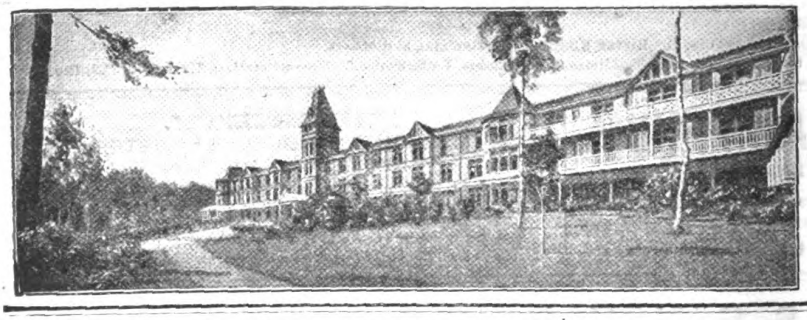
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply,
The Secretary,
Duff House,
Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON,
Banchory, N.B.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88.
Telegrams: "HYDRO, CATERHAM."

Resident Physician:
A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

BISHOPSTONE HOUSE, BEDFORD.

Telephone 708.

Private Home for Mentally afflicted Ladies; ten only received.
Terms from 4½ gns. weekly.
Apply, Medical Officer, or Mrs Peele

ST. GEORGE'S RETREAT,

BURGESS HILL, SUSSEX.

An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. New Marine Brighton Residence for change. Voluntary Boarders taken.

Resident and Visiting Medical Officers. London 1¼ hours.

For terms, &c., apply to the Superioress.

Telephone: Post Office 90 x.
Telegrams: "Wivelsfield Green."

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

ASHWOOD HOUSE

KINGSWINFORD

STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

SPRINGFIELD HOUSE

Near BEDFORD

(Telephone No. 17.)

A PRIVATE HOME for Mental Cases, established in 1837, surrounded by extensive grounds, reconstructed and modernised.

Terms from 3 guineas per week

(including Separate Bedrooms for all Suitable Cases).

For terms of admission, &c., apply to DAVID BOWER, M.D. as above, or at 5, Duchess-st., Portland-pl., W., on Tuesdays from 4 to 5.

TO MEMBERS OF THE MEDICAL PROFESSION.

IONIC MEDICATION, RADIANT HEAT,

MASSAGE, REMEDIAL EXERCISES, VIBRATION,
HIGH FREQUENCY, SCHNEE FOUR CELL BATHS,
NAUHEIM and AACHEN TREATMENTS.

EDGAR W. SHARMAN

(DIPLOMATE, FIRST PLACE WITH DISTINCTION, NATIONAL HOSP., LONDON)
39, Beaumont St., Devonshire St., W. 1.
Telephone No.: MAYFAIR 1324. Tel. Ad.: "SHARMANITE, LONDON."

EPILEPSY.

The David Lewis Colony has accommodation for Epileptic Patients of Good Social Position—for Gentlemen and Ladies in special houses at the Colony—for Boys at **COLTHURST HOUSE SCHOOL.**

Terms for Ladies and Gentlemen from 32s. a week. Boys at the rate of 32s. a week.

For further information apply to the Resident Medical Superintendent, David Lewis Colony, near Alderley Edge, Cheshire.

PORTSMOUTH CORPORATION MENTAL HOSPITAL

Provision for PRIVATE PATIENTS has just been provided in two detached Villas.

Inclusive charges from £1 11s. 6d. per week.

Apply to the Medical Superintendent.

CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations: Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

Associated Rooms, Private Rooms, or Suites. Very moderate terms.
Illustrated Prospectus from Resident Licensee, Mrs. THWAITES
Telephone: 494 Brixton.

Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtefold," Haslemere, Surrey. Telephone: 22 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

Lady, with 15 years' experience, offers comfortable Home, in healthy Country district, to one mentally defective, insane, or semi-invalid PATIENT. Terms on application.—Miss Boggis, Westwood Tattershall, Lincoln.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes, Telephone and Telegrams: Haynes, Brentwood 45.

Bristol Eye Hospital. — House SURGEON wanted for 1st January, 1918.
Candidates must be single and duly qualified.
Salary £120 per annum, with board, residence, and washing.
Applications, stating age, qualifications, and previous experience, with copies of recent testimonials, to be sent to the undersigned.
F. W. BABER, Secretary.

Beckett Hospital, Barnsley.—Second LADY HOUSE SURGEON.—The Hospital (120 beds) requires the services, on the 10th of January next, of a qualified lady (British) as Second Lady House Surgeon. Commencing salary £225, with board, &c. The Hospital offers most useful experience.
Applications, with two testimonials, to
Barnsley, 17th December, 1917. R. F. PAWSEY, Hon. Sec.

The Queen's Hospital for Children, Hackney road, Bethnal Green, E. 2.—Temporary ASSISTANT PHYSICIAN required for attendance on Monday aftern oons, 1.45.
Lunch provided.
Honorarium at the rate of £12 10s. for the one attendance per week, to cover travelling expenses.
Applications from Men or Women, stating qualifications and experience, should be sent as soon as possible to
T. GLENTON-KERR Secretary.
3rd December, 1917. Telephone: Dalston 305.

The Borough Hospital, Birkenhead.—Wanted, JUNIOR HOUSE SURGEON. Must be fully qualified. Duties include Casualties and Anæsthetics. Salary £170 per annum, with board and laundry. Applications to be sent to the Secretary at the Hospital.

Walsall and District Hospital.—The Committee invite applications from ladies for the position of SENIOR HOUSE SURGEON. Salary £250 per annum, with board, residence, and laundry. Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, at once to the undersigned. The Hospital has special departments for the treatment of diseases of the Ear, Nose, Throat, and Eye, and for the practice of Radiology.
4th December, 1917. WALTER FRANCOMBE, Secretary.

Salop County Council.—Elementary EDUCATION DEPARTMENT.—MEDICAL INSPECTION OF SCHOOL CHILDREN.—Applications are invited for the appointment of Temporary ASSISTANT SCHOOL MEDICAL OFFICER, to work under the supervision of the School Medical Officer.
Salary at the rate of £400 per annum, with travelling expenses.
Application forms can be obtained from Dr. Wheatley, County Buildings, Shrewsbury, and should be returned on or before January 7th, 1918. H. E. WALE, Secretary for Elementary Education.
County Buildings, Shrewsbury, 13th December, 1917.

Bedford County Hospital.—Wanted, about January 3rd, a HOUSE SURGEON, unmarried (ineligible for Military Service).
Candidates must be duly qualified in Medicine and Surgery.
Salary £174 10s. per annum
Also a HOUSE PHYSICIAN with similar qualifications. Salary £152 10s. per annum. Applications for this post will also be received from Senior Students, when the salary offered is £2 2s. per week.
Board, lodging, and laundry are given.
Apply (stating willingness to accept the junior position if offered) with particulars and three recent testimonials, addressed to
December 18th, 1917. BEAUCHAMP WADMORE, Secretary.

City and County of Kingston-upon-HULL.—The Corporation require the services of a RESIDENT MEDICAL OFFICER (Male or Female) to take charge of their Infectious Diseases Hospitals. Male candidates must be ineligible for Military Service.
Salary £400 per annum, with board, residence, and washing. Applicants should state their age and previous experience.
Applications must be accompanied by copies of three testimonials of recent date, and be endorsed "Application, Resident Medical Officer," and delivered to the undersigned at the Guildhall, Hull, on or before Friday, the 28th December. H. A. LEAROYD, Town Clerk.
Guildhall, Hull, 11th December, 1917.

Manchester Royal Infirmary.—The Board of Management of the Manchester Royal Infirmary invite applications for the following Resident appointment:—
RESIDENT SURGICAL OFFICER, Central Branch, £200.
Applicants must be above the medical military age of forty-five years or medically unfit for service.
They must be registered and hold a Medical and Surgical qualification.
The appointment is subject to the provisions of the by-laws as to notice of resignation.
Applications, stating age and qualifications, should be sent to the undersigned by the 24th December, 1917. By order.
FRANK G. HAZELL, General Superintendent and Secretary.
7th December, 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.
The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.
Applications also considered from those ineligible for Military Service.
Salary at the rate of £120 per annum, with board, apartments, and laundry.
Candidates must possess registered Medical and Surgical qualifications.
For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.
W. E. BUDGETT, Secretary & House Governor.
19th February, 1917.

The Hospital for Sick Children, Great Ormond-street, London, W.C.1.—TWO HOUSE SURGEONS are required:—One on 23rd January, 1918; one on 1st March, 1918
Candidates, Male or Female, are invited to send in their applications, addressed to the Secretary, as soon as possible, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible hospital appointment.
The appointment is made for a minimum period of six months. Salary at the rate of £100 per annum, washing allowance £5 per annum, and board and residence in the Hospital.
Candidates must possess a legal qualification to practise, and be ineligible for Military Service.
Candidates may be required to attend before a Meeting of the Joint Committees.
Forms of application can be obtained from the Secretary.
By order of the Committee of Management.
JAMES MCKAY, Acting Secretary.

The Royal Alexandra Hospital for SICK CHILDREN, Dyke-road, Brighton (61 beds).—A HOUSE SURGEON (Male or Female) required. Salary £200 a year, with board, lodging, and washing. Candidates must be registered under the Medical Act. Applications, with copies of recent testimonials, must be sent to Board Room, December, 1917. A. F. GRAVES, Secretary.

Resident Medical Officer wanted, ex-R.A.M.C. Officer preferred. Salary £1 per diem, with board, washing, and lodging. Apply to Officer in Charge, GRAYLINGWELL WAR HOSPITAL, Chichester.

City of Birmingham.—Lady Doctor wanted for Infant Welfare work only. Salary £350 per annum, rising to £450. Three months' leave of absence, with salary, given for study at the expiration of every three years of service.

Applications to be made on form, which can be obtained from the Medical Officer of Health, the Council House, Birmingham, on or before January 12th, 1918.

West London Hospital, Hammersmith-road, W. 6.—HOUSE SURGEON (Resident) wanted. Candidates are required to be registered under the Medical Act, to forward application, with copies only of testimonials, so as to reach me by Wednesday, December 26th next, and to attend a Committee meeting on Thursday, December 27th next, at 4 P.M.

A. BETTERIDGE, Secretary.

University College of South Wales and MONMOUTHSHIRE (Coleg Prifathrofaol Deheudir Cymru a Mynwy).—The Council of the College invites applications for the post of Temporary LECTURER in PHYSIOLOGICAL CHEMISTRY. Salary at the rate of £200 per annum.

Further particulars may be obtained from the undersigned, by whom applications with testimonials (which need not be printed) must be received on or before December 28th, 1917.

D. J. A. BROWN, Registrar.

University College, Cardiff, December 7th, 1917.

St. Bartholomew's Hospital, Rochester, Kent (120 beds, 50 reserved for Military).—The House Committee invite applications for the post of SENIOR RESIDENT HOUSE SURGEON. Salary at the rate of £300 per annum, with board, residence, and laundry.

Candidates must be exempt from Military Service. Applications, with full particulars of qualifications, registration, experience, age, &c., together with copies of three recent testimonials, to be forwarded to the undersigned not later than Jan 5th, 1918.

Duties to commence on or before March 15th.

E. A. PEMBLE, Secretary.

County Borough of East Ham EDUCATION COMMITTEE.—Temporary ASSISTANT SCHOOL MEDICAL OFFICER.—The East Ham Education Authority invite applications from fully qualified Women Medical Practitioners for the post of Temporary Assistant School Medical Officer, at a commencing salary of £350 per annum, rising by annual increments of £25 to £400 per annum. The person appointed will be required to devote whole-time service to the Authority.

Preference will be given to persons who have had special opportunities for studying Children's Diseases, particularly of the Eye, Ear, and Throat.

Applications (which should be on a printed form to be obtained from the undersigned), stating age and experience, together with not more than three recent testimonials, to be sent to me not later than Saturday, 5th January, 1918. F. R. THOMPSON, Secretary.

Education Office, Town Hall, East Ham, E. 6, 18th December, 1917.

York County Hospital (230 beds, including 110 for Soldiers).—Wanted, a LADY SUPERINTENDENT of NURSES. Candidates must be fully trained, certificated nurses, and must have had practical experience in institutional housekeeping. Salary £100 to £120, according to qualifications, with board, residence, &c. Applications, stating age, together with copies of not more than three recent testimonials, to be sent to the undersigned on or before the 28th instant.

11th Dec., 1917. FREDK. NEDEN, Secretary & Manager.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locums, well recommended, may still be obtained by Messrs. LEE & MARTIN, Ltd., 93, Hall-road, Handsworth, Birmingham. Telegrams: "Locum, Birmingham."

Locum Tenens Provided at ONE Hour's Notice.

APPLY

ARNOLD & SONS

(J. E. ARNOLD, E. R. ARNOLD),

Surgical Instrument Manufacturers,

TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C.1.

Telegrams: "Instruments, London." Telephone: 5240 City.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

Medical Man, Scotch Triple, age 46, recently disposed of Practice S. London, reliable, experienced, wishes LOCUM WORK, Management of Branch, or War Locum anywhere out of air-raid area, preferably near London. Entertain Partner hip or good Nucleus within two hours London.—Address, No. 567, THE LANCET Office, 423, Strand, W.C. 2.

Locum Tenens or Assistant.—Gentleman, experienced, well qualified, open to Engagement. Provincial Town or Country.—Address, No. 570, THE LANCET Office, 423, Strand, W.C. 2.

Colonial Medical Officer, age 34, on leave, desires position LOCUM or other Work for few weeks, till boat sails. Married. Abstainer.—Address, No. 571, THE LANCET Office, 423, Strand, W.C. 2.

Medical Woman, having good experience of Hospital and Private work, over nine years, free to take up post as LOCUM. Near London preferred.—Address, No. 573, THE LANCET Office, 423, Strand, W.C. 2.

Lady Dispenser wanted immediately. —Apply, stating salary required, &c., to Dr. Button, Rye, Sussex.

As Dispenser, Surgery Attendant.—Wanted, by full curriculum Student (qualified in Midwifery). Experience in Colliery, Club, and Private Practice.—Address, No. 572, THE LANCET Office, 423, Strand, W.C. 2.

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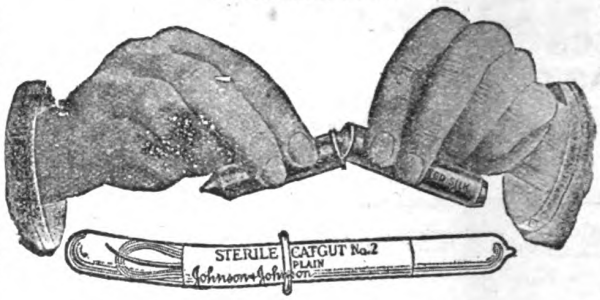
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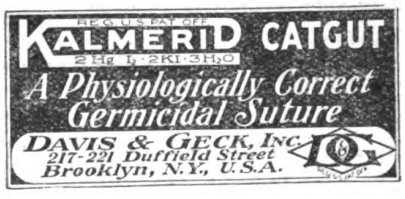
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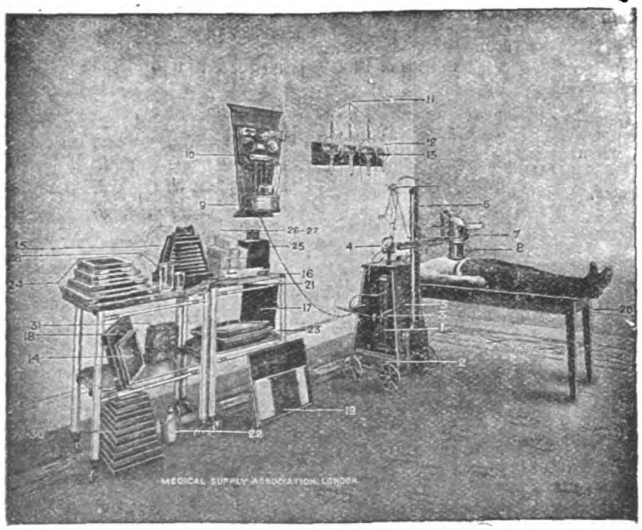
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> "Every effort is being made with the Departments concerned to maintain the supply of milk, but it may be impossible during the coming winter to prevent some shortage in various districts."

Special arrangements have been made by the Proprietors of the Standardised Dried Milk, GLAXO, to render available a supply of this milk for the requirements of infants and young children.

GLAXO is a dried form of whole milk, prepared under strictly supervised hygienic conditions, and provides a perfect food for babies.

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Osler regards a slight or complete absence of leucocytosis as a very unfavourable sign in pneumonia.

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increases leucocytosis; it relieves the heart by increasing the capillary circulation, it hastens the elimination of toxins, reduces the fever, and relieves the dyspnœa and cyanosis. The use of Antiphlogistine in pneumonia is a most rational procedure; it is logical, it is reasonable, and it is scientific.

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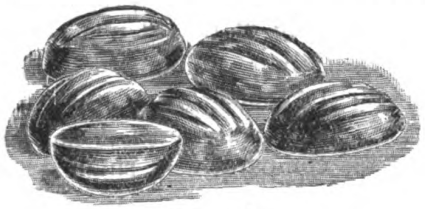
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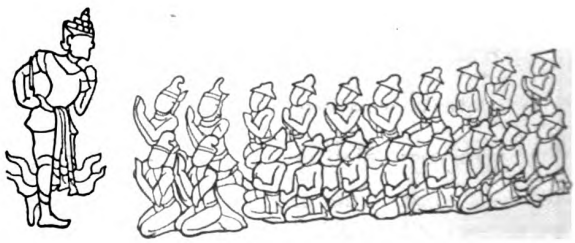
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'LODAL' *(6 : 7 - Dimethoxy - 2 - methyl - 3 : 4 - dihydroisoquinolinium Chloride)* causes tonic contraction of the uterus, raises the blood-pressure and slows the heart-beat. One of the most satisfactory agents in the treatment of Uterine Hæmorrhage—*e.g.* Menorrhagia, Dysmenorrhœa not due to fibroids, and at the Menopause.

DIRECTION.—One 'TABLOID' product, taken with a little water, thrice daily.

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Little remained of the ancient kingdom of Burma after the Mongol invasion of the thirteenth century. But two centuries later a young King of impetuous temper and great ability ascended the throne determined to reconquer and unite under his sway the states which had fallen away from the monarchy. During many years he went from state to state subduing the chiefs and receiving their submission—until at last he was solemnly consecrated with the title of King of Kings. Scenes similar to the one here reproduced from a rough unfinished painting, no doubt attended this King's victorious progress. The dress worn by the victor is the ancient Burmese royal costume. Date, 1500-1570.

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In Infant Feeding, to humanise cow's milk and prevent constipation.

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This is a particularly bland and assimilable preparation of Iron, in which the astringency of the ferruginous salt is counteracted by the slightly laxative action of the "MALTINE" base.

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is a complete, physiologically proportioned food, containing all the elements of nutrition in easily assimilated form, possesses valuable diastasic power, and is distinguished by its Palatability. *The British Medical Journal* states: "Apart from its own dietetic value, 'Maltine,' when combined with Cod Liver Oil, certainly enables the latter to be taken by persons who can neither swallow nor assimilate it in any other form."

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Will be pleased to send Samples Free of Charge to Medical Men.

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Beef, Milk, and Wheat (Pre-digested).

"LIQUID PEPTONOIDS" is a sustaining, reconstructive, mildly stimulating fluid nutrient, ready for immediate absorption and assimilation. It is aseptic, eminently palatable, free from extractive material, completely pre-digested, and sufficiently concentrated to nourish a patient for a considerable time during critical stages of severe illness when other forms of food are refused.

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Antiseptic
Non-greasy
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Supplied in 2 oz. collapsible metal tubes at 1/0 each



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'WELLCOME' BRAND Toilet Lanoline

Extremely pure, of pleasant consistency and refined fragrance. Readily absorbed. Agreeable to use.

Renders dry skins soft and supple

Supplied in tubes of two sizes at 6d. and 1/0 each



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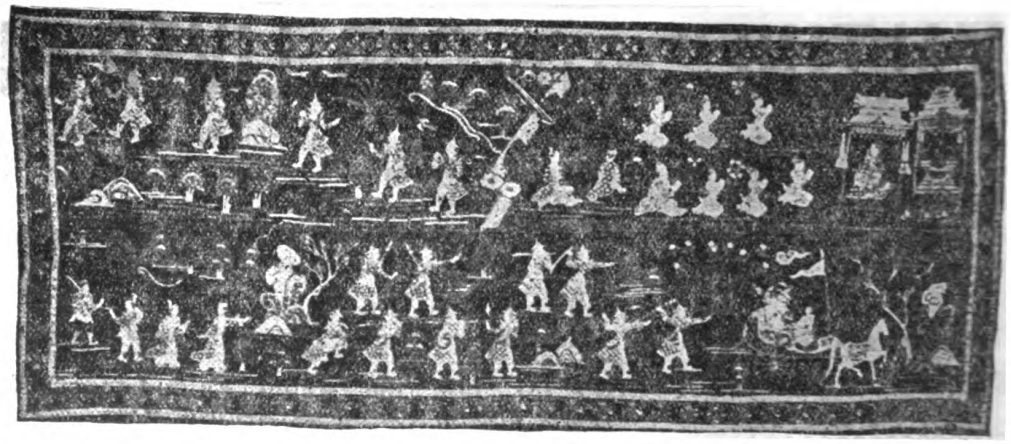
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Contains 10% of boric acid in a pure basis. Perfectly smooth, uniform and stable.

Ideal for prescribing

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A Burmese General going out to war accompanied by his body-guard. The Burmese military leaders were often very inefficient, a minister of state—perhaps some petty trader or village official—being on occasion called upon to act as General. The warriors are here depicted armed with the weapons used by their forefathers from time immemorial—the spear, the bow, and the native dha, a clumsy two-handed sword. In earlier times the General would more probably be mounted upon an elephant. His army would be more numerous than efficient, or well-equipped. A traveller to Burma in 1588 expresses his astonishment—"that in so barbarous a people there should bee such goodly orders as they have in their armies which be distinckt in squares of Eliphantes, of Horsemen, of Harquebushers and Pikemen, that truly the numbers of them are infinite, but their armour and weapons are verie naught and weak as well the one as the other, they have verie bad Pikes, their Swordes are worse made like long knives without pointes."

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COMBATS SERIES, 184—INDIAN

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Emetine Bismuthous Iodide

grain 1, Salol-coated

For treatment of amœbic dysentery. The purity of the product contributes to success.

Supplied in bottles of 36 at **10/0** *per bottle*

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Produces the complete gland effect. Used successfully in Myxœdema, Goitre, Obesity, Cretinism, etc.

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(Physiologically Pure)

Prepared with 'Wellcome' Brand Sodium Salicylate, B.P. (Physiologically Pure), which is perfectly free from cresotic acids.

gr. 3 per bottle of 25, **7d.**; *100,* **1/9**
gr. 5 ,, ,, ,, 25, **8d.**; *100,* **2/0**
0·5 gm. ,, ,, 25, **1/0**; *100,* **3/0**
1 gm. ,, ,, 25, **1/8**

AN INDIAN FOOTSOLDIER, from an ancient native sculpture, armed as described by a third century B.C. Greek historian and ambassador to India: "All wear swords of vast breadth, though scarce exceeding three cubits in length. These when they engage in close fight (which they do with reluctance) they grasp with both their hands that their blow may be the stronger." The warrior's sword-belt appears to be passed through a ring attached to the scabbard over which it crosses on its way downwards to be fastened to a ring at the tip; its ends are left free like those of a scarf. The head is bare except for a band or ribbon which floats in the wind. The dress consists of a long-sleeved tunic tied in two places with cords, beneath which is the Indian dhoti or sheet of cotton cloth, with ends reaching to the ground in stiff and formal folds. High boots are worn, tied at the top with cords ending in tassels. In his right hand the warrior holds a flower. Soldiers of this class belonged to the standing army, and we are told that "they are ready whenever they are wanted to march on an expedition for they bring nothing of their own with them except their bodies." They were maintained and equipped by the King. Date: 200-150 B.C.



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See also Wellcome's Medical Diary



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☛ ***The following Opinions of Medical Men are of great professional interest.***

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"I cannot give your Food a better testimonial than to say that I am a dyspeptic myself. I find it extremely useful and always palatable." F.R.C.S.

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"I have found it specially beneficial in checking incipient diarrhœa as well as for feeding up babies and keeping them in condition." F.R.C.S.

BENGER'S Food *for* INFANTS, INVALIDS, AND THE AGED,
is sold throughout the World by Chemists, &c., in sealed tins.

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M 6 c

The Fitz Patrick Lectures
ON
MEDICINE, MAGIC, AND RELIGION.

Delivered before the Royal College of Physicians of London,

BY W. H. R. RIVERS, M.D. LOND., F.R.C.P. LOND., F.R.S.,
FELLOW OF ST. JOHN'S COLLEGE, CAMBRIDGE.

LECTURE II.[1]

MR. PRESIDENT AND FELLOWS,—In my last lecture I gave some account of the present condition of the science of ethnology in its bearing on the problems raised by the complex relations between medicine, magic, and religion. It was seen that there is a great similarity throughout the world, not only in those practices which bring medicine into intimate relations with magic and religion, but also in the domestic or strictly medical remedies so often found side by side with those used by the magician and the priest. The problem now in special need of solution is whether these similar practices have arisen independently in different parts of the earth or have developed in some one locality whence they have been carried to their present areas of distribution by the wanderings of people.

In the last lecture I illustrated certain difficulties which meet us when we attempt the explanation of these similarities on the hypothesis of independent origin. The coexistence of two more or less opposed beliefs concerning the causation of disease in America and the failure to derive the domestic remedies of a lowly Papuan people from their theory of disease are difficult to explain on this hypothesis, while they are easy to understand if the movements of mankind over the earth's surface in early times were more extensive than has hitherto been supposed.

It is one thing, however, to state a case for transmission. It is another thing to demonstrate its importance in the history of human culture. The case for this mode of explaining the similarities of human culture will only be complete when we are able to point to certain regions of the earth as the places of origin of the similar practices, and when we have discovered by whom the practices were carried over the earth and the course taken by these travellers. I propose to begin to-day with a brief consideration of the methods by which the science of ethnology is now seeking the solution of such problems as those suggested by the facts laid before you in the last lecture.

METHODS OF SOLVING THE PROBLEMS.

In considering the methods by which we may hope to attain a knowledge of the manifold changes which have taken place in the relations between medicine, magic, and religion during the history of mankind, the first point to be noted is that we cannot expect to succeed if we limit our attention entirely to the special subject we are hoping to elucidate. The social life of man is so complex, the various elements of which it is built up form so closely interwoven a structure, especially in the lowly examples of culture with which we are now dealing, that we cannot expect to understand a part except in its relation to the whole.

The Importance attached to Numbers.

I may illustrate this subject by considering for a moment a feature of medical practice in which numbers are concerned. It is the custom of certain peoples that a therapeutic measure shall be repeated a definite number of times—three, four, five, or seven, as the case may be. A striking example from Eddystone Island in the Solomons was given in my second lecture last year. In this island a treatment usually lasts for four days, sometimes for four days in each of four successive months.

This importance of the number four in medical practice is far from unique. The ancient Egyptians also had a four-day cure, and among the Cherokee of North America the normal length of a course of treatment is four days.[2]

Whether this striking agreement between ancient Egypt, the Solomon Islands, and North America is the result of the spread of culture, or whether the period of four days has been independently chosen in the three widely separated localities, is not a problem which can be settled by the study of medicine alone. Both in Eddystone Island and North America the fourfold nature of the medical rites forms only part of a system which makes the number four of the greatest importance throughout the whole range of ceremonial, whether medical, magical or religious. In both places the four-day cure is only one manifestation of a belief which ascribes special virtue to the number four.

A wider survey shows that, though we do not know of a four-day cure in Indonesia, the number is of great importance not only in religious ceremonial but also in connexion with disease. Thus, when a patient is isolated with an *adu* in front of him in the island of Nias the isolation lasts for four days. Again, in the proceedings of initiation by which a youth is fitted for the duties of a priest, his instruction in the proper use of the gong and in the appropriate formulas lasts for four days. In a different department of custom, food is put aside for the use of the ghost for four days after death, and for these four days the people do not go into the rice-fields. Again, in countries so widely separated as Greece and Japan we find a four-fold classification prominent. For Greece, I need only refer to the four elements, the four humours, &c. The question whether the existence of a four-day cure in Egypt, Eddystone Island, and North America is due to transmission or to independent origin is only part of the much larger question whether Egypt, Greece, Indonesia, Japan, the Solomon Islands, and North America possess geographical, climatic, or other features in common which have led their inhabitants to attach particular importance to the number four, or whether this number acquired in some one part of the world a religious importance with which it passed elsewhere as a constituent element of a migrant culture.

The Criterion of Common Distribution.

This need for a broad and comprehensive study becomes especially apparent in the chief method by which the ethnologist is now striving to build up schemes of the history of human institutions. For this purpose one of his chief instruments is the criterion of common distribution. If we map out the distribution over the earth of two customs between which no natural relationship can be discovered and find that the areas of distribution correspond, and if this correspondence of distribution cannot be traced to any uniform climatic or other geographical conditions, we conclude that the association between the two customs came into existence in some part of the earth and was spread thence by the movements of people, either in the course of definite migrations or for the purpose of trade.

Thus no natural connexion can be found between the worship of the sun and the practice of building megalithic monuments. When, therefore, we find these two customs associated together in some parts of the world while both are absent in others, the chances against their independent origin become very much greater than if no such agreement of distribution existed. When instead of two such associated customs we find many, the chances against their independent origin become very great.

Some Difficulties Met With.

We are at present only on the threshold of the quest by which we may hope to break up the complex web of human culture into its component strands, by which we may assign each element of culture to a definite movement of mankind. Our immediate task is to show the principles to be employed in this quest and the methods by which these principles may be applied. I propose to devote the chief part of this second lecture to certain difficulties which meet us when we endeavour to use the criterion of common distribution as our test for transmission.

If a culture has been transported over the earth from a locality in which it has developed, we must expect to find gaps in the chain of evidence. We must expect that one element of culture will fail to implant itself here and another there; that other elements will be modified in their new home, sometimes, perhaps, to such an extent as to make it difficult to recognise the relation of the final product to the custom in which it had its source. I will begin by formulating a principle which may guide us in our inquiry into such

[1] Lecture I was published in THE LANCET of Dec. 22nd, 1917, p. 919.
[2] J. Mooney: Jour. Amer. Folk-Lore, 1890, iii., 48.

cases of disappearance and modification. I shall then inquire whether it is possible to see the working of this principle when we study the nature and distribution of a small group of therapeutic and hygienic customs.

I have already suggested that a medical practice in a new home may lose its therapeutic character and become part of an indigenous magical or religious cult. On the other hand, an introduced magical or religious practice may receive a therapeutic application which it did not possess in its original home.

FORMULATION OF GUIDING PRINCIPLE.

The kind of process which ensues when a culture is transplanted into a new home may be formulated as follows. Transplanted elements of culture tend to take root in a new home in so far as they are in harmony with the physical and cultural nature of their new environment, and if they succeed in taking root tend to become modified in the direction of the indigenous culture by which they are assimilated. This proposition has two parts—one dealing with the success or failure of new elements of culture to survive in a new home; the other, with the tendency to modification which shows itself in greater or less degree in cases of success.

Factors Affecting Success or Failure of Transplanted Elements of Culture.

Physical conditions are often such as to prevent the introduction of customs which would otherwise form part of a culture-complex. Thus, the absence of suitable earth may lead to a disappearance of pottery, or the difficulty of obtaining stone may lead to the degeneration of megalithic monuments, so that they resemble those of other parts of the world in form only and not in size.

Less obvious but quite as important are characters of the social environment into which a new element of culture is conveyed. This environment may be so adverse to the newly-introduced practice that if this succeeds in implanting itself at all it soon withers and disappears under the opposition of indigenous trends of thought and action. Thus, it is probably the very different nature of the social environment of Melanesia and Polynesia which has led to a remarkable difference between these two regions in respect to their use of strictly medical practices. Medical and surgical remedies comparable with those of civilised peoples are of more frequent occurrence in Melanesia than in Polynesia. Even when strictly medical or surgical practices are found in Polynesia there is often evidence that they have only recently been introduced. This difference between the two ethnographic provinces presents us with a striking problem which seems at first sight difficult to explain either on the hypothesis of transmission or on that of independent origin. The Polynesians are undoubtedly a more intelligent people than the Melanesians, and if we take our own civilisation as the standard, Polynesian culture has reached a considerably higher level of development than that of Melanesia. If we believe that many medical and surgical remedies have been discovered independently in this part of the world, it is difficult to understand why the more intelligent and cultivated people should have fallen behind in these discoveries.

If, on the other hand, we look at the matter from the point of view furnished by the hypothesis of transmission we meet a problem of great interest. If this hypothesis is to work we shall have to find some reason why medical and surgical practices have been adopted by the lowly Melanesian in fuller measure than by the cultured Polynesian. I suggest that the reason becomes apparent if we apply the principle which I have just enunciated.

We have seen that the special characteristic of the Polynesian is the highly religious nature of his life. Disease is ascribed wholly to the action of gods and other spiritual beings, and its cure is mainly, in some cases entirely, sought by means of appeal to these higher powers. In Melanesia, on the other hand, disease is ascribed either to direct human agency or to spiritual agency which is more or less under human guidance or control. The measures employed to remedy the action of spiritual beings involve the intervention of persons whose knowledge and power are believed to be essential to success.

Let us now try to imagine the nature of the process which would follow the introduction of a medical or surgical practice among each people. There can be little question which would give it the heartier reception, which culture would be endowed with beliefs and sentiments to form the more appropriate soil for the growth of the new custom.

However closely a system of medicine be founded upon the belief in the working of a natural law, there can be no question that in fact, and still more in the minds of both practitioner and patient, success depends upon individual skill and on the human factor. If this be so among ourselves, how much more must it be true of medical and surgical remedies introduced by strangers among a people who know nothing of natural law as we understand it! Such people will inevitably ascribe any success which follows the application of the remedy to the power of the man who has brought it among them and by whom it is applied. The human factor will bulk so largely in their estimate of the value of the new remedy that its use will at once fall into line with those indigenous practices which involve the idea of human agency. To a people, on the other hand, imbued with the belief in the agency of higher powers, such remedies will not appeal. They may even be regarded as sacrilegious attempts to struggle against the will of the gods.

If, when certain medical remedies were introduced into Oceania, the differences between Melanesian and Polynesian were what they are to-day, or even if they were of the same general order, we are furnished with an explanation of the greater prevalence of strictly medical practices among the more lowly people. This example suggests how the presence or absence of an introduced medical practice may be determined by the nature of the indigenous culture into which it is received, by the degree in which it is adapted to the beliefs and sentiments natural to the people.

An example of a different kind is given in the distribution of blood-letting in the East. This practice, in the form of venesection, cupping, and leeching, is well established in India, but is almost completely absent in China, although several of the medical arts of this country are known to have come from India. Those who have recorded the absence or rarity of blood-letting in China note that it is due to the dislike of the spilling of blood which is characteristic of its people, a dislike which is chiefly responsible for the low state of Chinese surgery. That the practice of blood-letting is not indigenous in China is rendered highly probable by the existence of the dry method of cupping. If we believe that this practice has been developed independently in China, we shall be driven into the position that a people who so objected to the sight of blood that the almost universal practice of blood-letting is hardly known among them were nevertheless led to discover a highly specialised therapeutic measure which elsewhere is intimately associated with blood-letting.

Still another indication that the knowledge of blood-letting reached China is shown by the fact that leeches are used for a medical purpose. They are sometimes applied to the cervix uteri in order to induce abortion.

The absence or rarity of blood-letting combined with the presence of dry cupping and the medicinal use of leeches receives a natural explanation if the various forms of blood-letting known in India were transported to China, but met with a poor reception owing to their being in conflict with the beliefs and sentiments of the Chinese in connexion with blood, while the practice of dry cupping which does not involve the spilling of blood became an important part of their therapeutic practice.

Modification of Practices after Introduction.

I can now turn to the second branch of my subject, the modification of introduced practices due to the influence of the environment, physical and social, to which they are exposed. I may begin by considering a few examples of this process of modification taken from other departments of social life.

The modification of introduced practices occurs through the whole range of human culture. Whenever an element of culture, whether it be a word, a grammatical form, a religious practice, a social custom, or a material object passes from one part of the world to another, it tends to become changed in the process, it does not remain in its new home what it was in its old.

In the domain of language the process is so obvious that comment is hardly needed, especially to us whose speech is full of words taken from languages widely different from it-

original Anglo-Saxon basis. I may refer, however, for a moment to the words with which the English language is now being enriched as a consequence of the war. The new French and German words which are finding their way into our speech not only differ from the original in grammatical form, and still more in pronunciation, but they are acquiring special meanings, and in some cases have already assumed a form which would make it difficult for the most expert philologists to trace their origin. The derivation of the "napoo" of the British Tommy from "il n'y a plus" is a good example.

Another striking example of modification occurs in the case of decorative art. A mode of artistic expression introduced into a new home never remains the same. The art of a country resembles every other product of human society in becoming conventionalised and subject to definite laws or canons. No new form of art can escape the influence of these conventions. Thus, an introduced human motive may be changed as the result of its assimilation by a conventionalised geometrical art, so that no one would recognise the human form in the final product if it were not for intermediate forms which give the clue to its origin and development.[3]

The laws governing the modification of introduced elements of culture which I have illustrated by examples taken from language and art apply also to the practices and beliefs which make up the art of medicine. If medical and surgical practices have been transmitted from one part of the world to another we must not expect exact resemblances. Not only must we look for modifications, developments, and complications, but we must also be prepared for changes so great that without intermediate stages in the process of transformation it would be impossible to recognise a practice, perhaps no longer therapeutic at all, into which an introduced medical practice has been transformed.

EXAMPLES SUGGESTED AS MODIFICATIONS OF TRANSMITTED PRACTICES.

I shall now consider some examples in which practices, the transportation of which from one part of the earth to another I shall assume, seem to have suffered change. As I have already said, the scientific demonstration of such change can only be a gradual process resting upon a far wider study than is possible on such an occasion as this. My object to-day is rather to suggest certain medical and surgical processes as fit subjects for this line of study.

Blood-letting.

I will begin with a possibility suggested by the Chinese attitude towards blood-letting which I dealt with just now. We saw that though the letting of blood is rarely practised in China, the closely allied practice of dry-cupping takes a prominent place in the medical practice of its people. The possibility is suggested that this practice arose in China as the result of the modification of wet-cupping, as a result of the objection of the Chinese to the shedding of blood. Whether this be so or whether dry-cupping is the only survivor of a group of introduced practices is a question which can only be answered on the basis of a wider survey than is possible here.[4]

Another case in which the practice of blood-letting may have suffered modification in aim, if not in method, is suggested by the frequency of blood-letting as a religious rite. In many parts of the world the letting of blood by means of incisions or scarifications forms part of a religious ritual, while in other cases it is a feature of the customs accompanying mourning for the dead and other social practices which probably have or have had a religious significance. The problem arises whether there is any relation between this form of blood-letting and that which has a therapeutic purpose. We know a few facts which point to a connexion between the two kinds of practice. Thus, in Polynesia the letting of blood by means of gashes or scarifications as a therapeutic practice is specially characteristic of the western islands, such as Samoa, and seems to be in vogue to a much smaller extent in the Eastern Pacific. A similar difference characterises the two regions in regard to the letting of blood for religious purposes, of which we hear far more in the Western than in the Eastern Pacific. The common distribution of the therapeutic and religious forms of blood-letting in the Pacific suggests that there is a definite connexion between the two. It is possible that we have here a case in which a medical practice introduced into the highly religious atmosphere of Polynesia has come to form part of religious ceremonial and ordinary social custom, while still continuing to be used therapeutically.

Massage.

The modification of a medical practice when introduced into a new environment would seem to be well illustrated by massage. I have elsewhere[5] drawn attention to this possibility. The natives of Eddystone Island in the Solomons employ manipulations which so closely resemble those of our own massage that, if simply observed and not made the subject of special inquiry, they would undoubtedly be regarded as the equivalent of this remedy as practised by ourselves. Inquiry showed, however, that the object of the manipulations of the Eddystone leech in one case was to act upon an imaginary octopus which was supposed to have taken up its abode in the body of a patient, while in other cases the object was to extract from the body an immaterial object or principle which was held to be the cause of fever or other form of disease.

That the manipulations of the Solomon Islands stand in a definite relation to massage is rendered highly probable by the occurrence of genuine massage among the Polynesians, a people with whose culture that of Melanesia has much in common. Thus, in Samoa[6] two forms of massage are practised, each with a special name. That called *milimili* consists of gentle rubbing with the finger-tips, while the other, *tomitomi*, takes the form of kneading movements similar to those of our own practice. Both are used to remove pain and as a restorative in cases of fatigue.

In the Tonga Islands three different operations are recognised.[7] One called *milí* consists of rubbing movements, another *fota* takes the form of compression, while in the third called *tugitugi* the body is beaten. Massage is widely used in other parts of Polynesia. Sometimes it assumes peculiar forms. Thus, in the Hawaiian Islands, heavy objects are rolled along the body; in the Tongan Islands a man who is fatigued will get three or four children to trample him all over; and a similar method is used in the Eastern Pacific.

Massage is widely employed in America, and is very prominent in the therapeutic system of China and Japan. In Japan the practice is said to go back to the time of the Emperor Jimmu (660–585 B.C.). The blind are employed as masseurs, and the movements they use include rubbing, kneading, pressing, and striking according to definite rules. Chamberlain[8] records a feature of Japanese massage which is of distinct interest in relation to the point I am now considering. He notes that formerly the Japanese always massaged the limbs downwards, and have only adopted the practice of rubbing towards the trunk from Europeans. This downward direction of movements is characteristic of Melanesia and other places, where it is intended to expel injurious agencies from the body, the object being to force or induce the spirit inhabiting the limb to quit it at the extremity.

There is no question that the massage of Japan is a practice as definitely therapeutic as among ourselves, but the centrifugal direction of its manipulations suggests a relation to the belief in the causation of disease by objects or beings which it is the object of the massage to expel.

These examples are, I think, sufficient to show that there is a connexion between the therapeutic and hygienic art of massage and the manipulations by which many peoples extract or expel from the body agencies, material or immaterial, which they believe to be the causes of disease. I must be content now to raise the problem and leave for a survey on a far wider basis the consideration whether the latter usage has arisen through modification of an introduced therapeutic practice, or whether the therapeutic use has grown out of an older practice resting upon magical or religious beliefs. I will only say here that in Oceania there is little doubt about the answer. The highly developed massage of Polynesia has almost certainly been introduced into Melanesia either by the Polynesians themselves or more probably by the immigrant people who form the upper stratum of Polynesian society. If so introduced, it has certainly been modified in accordance with the indigenous ideas of the Melanesian concerning the causation and nature of disease.

Sweat-baths.

In the case of massage I have been dealing with the relation between a practice so definitely therapeutic that it forms part of our own system of medicine and a group of practices which, while still related to disease, yet bear the stamp of magic or charlatanry rather than of genuine medicine. A problem of a different kind presents itself in the use of vapour-baths which in one form or another have a very wide distribution among the peoples of the earth.

The practice of exposing the body or some part of it to heat so as to produce sweating is found in a more or less crude form in Melanesia, New Guinea, Polynesia, Africa, and America, as well as in the eastern countries from which we have ourselves largely or altogether derived the practice.[9] Thus, in Melanesia an injured limb will be exposed to the vapour rising from damp leaves or moss placed over a fire. In the Hawaiian Islands[10] the patient is enclosed in a hut within which steam is produced, and a similar practice occurs in Africa where, for instance, the Ba-Ronga[11] enclose a sick man in a small hut made of mats, and by putting a pot with live embers by his side, cause him to sweat profusely.

The country in which the vapour-bath has reached its highest pitch of development is America, where, especially on the west coast, among the advanced Pueblo Indians of New Mexico and Arizona, and among the ancient Aztecs of Mexico, the sweat-house is a most important social institution. Among many North American peoples it was the representative of the men's club-house of Melanesia and other parts of the world, which it resembled in the feature that women were rigorously excluded from its precincts. Among the Pueblo Indians the sweat-house has been described[12] as at once the bathroom, town-hall, council chamber, club-room, and church of the people.

If there is anything in common to the sweat house of America and the vapour-baths of other parts of the world, it is evident that a process of modification must have taken place. If so, there can be little doubt that this process has been one in which a therapeutic and hygienic practice introduced into America has undergone a process of development, probably through a process of fusion with other social practices, whereby it has become one of the most important social institutions of the people.

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[3] W. H. R. Rivers: Rep. Brit. Assoc., Dundee, 1912, p. 599; History of Melanesian Society, Cambridge, 1914, ii., 374.

[4] I may say now that this survey will almost certainly show that the practice of dry-cupping did not arise in China.

[5] Proc. Internat. Congress of Medicine, London, 1913, Section xxiii., 1.

[6] J. B. Stair: Old Samoa, 1897, p. 165.

[7] Mariner's Tonga, London, 1817, ii., 350.

[8] Things Japanese, London, 1905, p. 316.

[9] The sweat-houses of Ireland suggest that the practice is ancient in Northern Europe and that the modern Russian and Turkish forms are only improved forms of an old and indigenous Celtic or Teutonic practice.

[10] David Malo: Hawaiian Antiquities, Honolulu, 1903, p. 146.

[11] H. A. Junod: Life of a South African Tribe, Neuchatel, 1913, ii., 426.

[12] H. H. Bancroft: Native Races of the Pacific States, London, 1875 i., 537.

Circumcision and Sub-incision.

A striking example of modification of an introduced practice is provided by circumcision among ourselves. At the present time this operation is performed in this country for two wholly different purposes. Among one section of the population it is a religious rite, intimately bound up with the social traditions of those who practise it, while among the general body of the people it is a hygienic practice still in process of development and gradually coming more and more into vogue on account of its practical value.

There is no doubt that the great increase in the frequency of circumcision in this country is due to Jewish influence. The observation of the beneficial hygienic effects of the operation among the Jewish section of the population has made an operation which formerly only entered into our system of surgery in cases of special need one which is performed in childhood on a large section of the population. We have here a clear example in which an introduced religious practice has had a definite effect in fostering, if not in producing, a measure of hygienic surgery.

There is reason to suppose that one of the most extraordinary mutilations known to be practised by mankind is an example of a change in the opposite direction, an introduced surgical procedure having become a religious or magico-religious rite. The aborigines of Australia practise on their youth a mutilation, formerly known as the "terrible rite" and now as sub-incision, in which the urethra is opened to a great part of its length, sometimes from the perineum to the meatus. It is generally supposed that this operation is limited to Australia, and since this continent is usually regarded as one of the strongholds of the advocates of independent origin, ethnologists have been content to regard sub-incision as a wholly independent invention of the Australian aboriginal, an extension of the idea of mutilation of the genital organs, of which circumcision is the most frequent and widespread example.

A very similar operation, however, is practised in Fiji and Tonga, where it has a purely therapeutic purpose. Although the practice was originally Fijian, our most complete description of it comes from Tonga.[13] The urethra is opened and a thread passed, so that one end hangs from the artificial opening and the other from the meatus. The thread acts as a seton, and is occasionally drawn backwards and forwards so as to produce pain and the discharge of blood. The operation is a favourite remedy for tetanus, and Mariner saw several cases in which its employment was followed by recovery. The operation is also performed in cases of injury accompanied, or believed to be accompanied, by extravasation of blood into the abdominal cavity, the motive being to get rid of the blood by way of the urethra.

The close resemblance between the Australian and the Fijian practices suggests that they are related to one another. To suppose that two peoples not very remote from one another geographically, and resembling one another to some extent physically, were led to devise this extraordinary operation in total independence of one another makes too great a demand on scientific credulity. We can be confident that the practice has been transmitted from one people to the other, or, more probably, that the Australian and Fijian practices are two different manifestations of a custom belonging to a migrant people who reached both localities. Here, as in the cases already considered, the evidence is not sufficient to show the primary purpose of the operation. It seems most likely that we have here an example of a surgical remedy which, introduced into Australia among a people greatly interested in mutilation as a feature of the ceremonial of initiation into manhood, was adopted and applied to this new purpose.

SOME POINTS RAISED IN RELATION TO DISTRIBUTION OF CUSTOMS.

If the hypothesis of transmission holds good, certain practices would seem to have been modified in the process of introduction among peoples with beliefs and customs widely different from those of the locality where the particular practices had their source. My aim has been to show that in any attempt to work out the distribution of medical practices we must not study merely the obviously diagnostic and therapeutic measures, but must also look for other manifestations, sometimes in a guise strangely different from that of the original custom.

It will not be possible to consider how far we can now construct a scheme in which the practices I have to-day considered can be assigned to definite movements of mankind over the earth's surface. In the scheme of migration put forward by Professor Elliot Smith[14] to account for the common distribution of megaliths, mummification, sun-cult, and other elements of culture, one of the customs I have considered to-day, is included. The distribution of massage has suggested to Elliot Smith that this practice was carried over the earth by a people who mummified their dead, worshipped the sun, and constructed dolmens and other rude monuments of stone. It will not be possible here to consider this aspect of the subject fully; I must be content to point to a few facts which must be taken into account in such inquiries.

The distribution of the practice of blood-letting in Polynesia suggests that it belongs to a relatively late influence. It is especially prominent, both in religious rites and therapeutic practice, in the Samoan and Tongan islands of the Western Pacific, where there is reason to suspect the relatively late influence of a people who, instead of exposing their dead on platforms, interred them in stone vaults in the extended position. In Melanesia we know of the practice of blood-letting in places where the influence of the people who interred their dead in the extended position is especially prominent. The distribution of blood-letting in Oceania suggests that it belongs to the relatively late influence of a people who interred their dead. The therapeutic practice of blood-letting is very prominent in India, and there is reason to believe that it is by the movements of a people who, while influencing India, were themselves largely influenced by its culture, that the practice of blood-letting has been spread over the earth.

The practice of massage, on the other hand, occurs throughout the Pacific, and is especially prominent in the eastern islands, such as Tahiti, where the dead are mummified on platforms or in canoes. The Polynesian distribution suggests the association of massage with a movement earlier than that which carried the practice of blood-letting.

Another point suggested by the distribution of customs which I have considered in brief to-day is that sweat-baths and massage have travelled over the earth in company; just as they are closely associated among ourselves, so do they seem to be associated among many other peoples, suggesting that their diffusion was due to one and the same influence.

There are many other points which I should have liked to raise if there had been time. I can only refer here to the highly specialised character of such processes as venesection and cupping, which make it most unlikely that they have been discovered independently by the rude peoples who now practise them. I may also mention the frequent association throughout the world of the use of the cold plunge after the sweat-bath—a custom so little natural that its practice in Polynesia greatly excited the apprehensions of the early missionaries, who were evidently ignorant that a cold plunge was a feature of the sweat-bath of their own culture.

Scantiness of Available Evidence.

I have now considered a number of practices found in different parts of the world with the object of seeing how they bear scrutiny under the two hypotheses of independent origin and transmission. I hope to have succeeded in showing that the hypothesis of independent origin furnishes a very inadequate explanation of the wide distribution of these practices, and often leads us into positions wholly at variance with the primary assumptions upon which the hypothesis rests. I have not been able to bring forward any absolutely conclusive evidence in favour of transmission, nor, when transmission seems probable, have I been able to point decisively to any one movement of mankind as its vehicle. As I have already stated, this is partly due to the fact that the demonstration of transmission must be reached by an argument in which each element of culture is studied in its relation to others, so that it only becomes possible through a far more comprehensive study than is possible on such an occasion as this. My object has been rather to suggest problems and consider the principles which we must follow in attempting their solution.

One fact which makes it impossible at present to reach any positive conclusion on these topics is the scantiness of the available evidence. There are few branches of human culture about which we know so little as in the case of medicine. Owing to the intimate relations between medicine, magic, and religion much is to be learnt about the reaction of man towards disease from a study of the many researches on magic and religion which the wide interest in these subjects has produced. If the many medical men whose work takes them among peoples of lowly culture would take as much interest in the study of the ruder phases of their art as is taken by the missionary in the study of the religions he is trying to displace, we should soon be provided with a rich mass of ore from which to extract material for the construction of a history of the earlier phases of the practice of medicine.

HISTORY AND EVOLUTION.

At the beginning of these lectures I distinguished between the historical and evolutionary treatment of the subject. It is with the historical aspect that I have so far chiefly dealt with the ways in which the course of the history of medicine has been influenced by the movements of man and of culture over the earth's surface. We have seen that this course has not been one of simple progress, such as was

[13] Mariner's Tonga, 1817, ii.
[14] The Migrations of Early Culture, Manchester, 1915.

once supposed to be characteristic of evolution. On the contrary, there has been revealed a complicated process of transformation in which it seems as if therapeutic measures of a more or less advanced kind, measures perhaps founded upon a rational pathology, have been transformed into religious or magical rites or into social practices which have passed from generation to generation through the conservatism of mankind. The history of medicine as illustrated by the ruder forms of human culture seems to show a course in which degeneration has played as great a part as progress.

It must be noted that when I speak of degeneration as shown by the transformation of medical practices into magical or religious rites, this is true only in so far as their medical character is concerned. We can only regard in this light a transformation by which a medical practice has wholly lost its therapeutic character. Few will object when we regard the transformation of a medical practice into a magical rite as an example of degeneration, but when we are dealing with transitions in the direction of religion it is necessary to bear in mind that the transformed medical practice may fulfil as high a social purpose as it fulfilled in its original character.

The frequency with which we seem to have found degeneration is largely due to the special character of this study, to its special occupation with the more backward peoples of the earth, peoples among whom we might expect to find degeneration bulking more largely than it would do in a wider survey of human society. As I have already said, we are only now emerging from a period in the study of human society during which the factor of degeneration has been almost wholly neglected or greatly underrated, even in the case of the ruder phases of human culture. In seeking to show how great a part degeneration has played and is still playing in the history of human society, we must be careful not to go to the opposite extreme and overrate its frequency and importance.

Complex Nature of the Process.

If we survey the history of the practices which make up man's behaviour towards disease, there can be no question that running through the complex web of change which this history shows there has been a constant thread of progress. The degenerations and transformations shown so frequently in the history of medicine have only served to complicate a process in which man has succeeded more and more in bringing disease under control, in reducing the frequency and severity of pain, in remedying the many disabilities resulting from disease, and in rendering life longer and more secure.

This course has been complicated by two factors which have run counter to this progress. The growth of civilisation has brought with it new forms of disease or has increased the frequency of the old, chiefly as a result of inadequate adjustments of social means to the increasing complexity of social life. Thus, hardly an occupation has been developed by civilisation which has not brought with it some new form, or has increased the liabilities to some old form, of disease. Perhaps still more important has been the increased tendency to instability of the mental life due to the greater stress and strain to which advancing civilisation exposes mankind. While man has been slowly forging weapons with which to combat disease, other lines of social progress have been producing new morbid states to combat which these and still other weapons are required.

Again, the movements of mankind over the earth's surface, which have been one of the chief instruments in the progress of medicine, as of human culture in general, have themselves been the means by which mankind has distributed disease. In some cases the seeds of disease thus distributed have been the chief factors in the degeneration of culture, and in the disappearance of peoples who were the bearers of a culture from which perhaps our own advanced civilisation might have much to learn. These ways in which advancing culture has increased the opportunities for the onslaughts of disease and has distributed its seeds, only serve, however, to complicate and obscure a progress which is very real. Those who object to the crude evolutionary hypotheses of the last century do so, not because they believe the hypotheses of evolution to be false, but because their advocates have treated as simple a process which has been exceedingly complex. The opposition which is now showing itself more and more as this century progresses is not so much to evolution as to the evolutionists.

The Influence of Cultural Mixture on Progress.

Not only have these lectures led us frequently to the process of degeneration, but this degeneration seems to have been especially the result of the contact of peoples and the blending of their cultures. Here again, however, the frequency with which we have found degeneration as the outcome of this contact and blending is due to the special limitations of the scope of these lectures. If we extend our survey we find that the history of medicine resembles that of every other branch of social life in showing us an abundance of cases in which the movements of peoples and of their cultures have promoted progress. This is nowhere better illustrated than in the history of the movements whereby the cultures of India, Mesopotamia, Egypt, and Greece were brought into contact, producing a great wave of progress which overflowed to Italy and Spain, and through these channels came to have so great an influence on the medical art of our forefathers.

This influence of cultural mixture upon the course of progress has now reached a stage in which the movement of people in the older sense is no longer necessary. The universal diffusion of the art of printing has so made the world one that an advance in medicine arising in any part of the earth rapidly becomes the property of the whole. Even in the later phases of the history of medicine, however, the course has not been wholly one of progress. The history of the practice of blood-letting which this country acquired in the schools of Italy and Spain, as a legacy from the medicine of Greece and Arabia, cannot be regarded as an example of progress. At the present time I believe that we are witnessing a similar exaggeration and uncritical application of the introduced art of massage. Nevertheless, behind all these exaggerations and misapplications of introduced practices which still occur in the practice of medicine, and behind all the transformations which have characterised the different stages of its history, there stands out the vast importance of the contact of peoples and the blending of their cultures as a main, if not the chief, source of progress. The earlier history of mankind seems to have been one in which different parts of the earth were subject to long periods of isolation, relative or complete, in which progress stagnated or turned to degeneration. Then came some movement of mankind by which elements of culture were diffused, and when transplanted into places where culture had stagnated acted as the stimuli to new processes of evolution and progress. The nature of the process which took place in each region depended on many things: on the nature of the indigenous culture and of the new elements; on the relative numbers of the migrant and indigenous peoples; on the difference in the level of their cultures; on the nature of the interaction between the two peoples, whether peaceful or warlike; and on many other factors.

The Effect on Medicine of Mixture of Cultures.

Of especial importance, so far as medicine is concerned, has been the prevailing tendency of the indigenous culture in the direction of magic or religion. When a people stand at a level of culture in which medicine has a rational basis so that its measures rest on principles deserving to be ranked as scientific, the mixture of cultures will lead to development in medicine. Introduced medical practices will not only stimulate the growth of the indigenous art, but may lead to modification of the introduced practice, modifications designed to make it a more fit instrument with which to combat disease. If, on the other hand, the indigenous culture is dominated wholly by the religious attitude, the result, unless the introducers of the new art are especially numerous or powerful, may only be to deprive this of the purpose to which it is primarily adapted, and to convert it into a practice so closely associated with religion and apparently partaking so wholly of the religious spirit that it may be difficult to recognise any relation to the art of medicine.

Similarly, if the indigenous people are wholly given over to magic an introduced medical practice may so assimilate itself with the native mode of thought that again its medical character and rational basis may be lost or greatly obscured.

Not only does the comparative study of medicine, magic, and religion serve well to illustrate the complex character of human progress, but it may also teach us much concerning the nature of the evolutionary process by which

complexity is brought about. It is generally held that one of the chief features of the process of evolution is the increase in specialisation of function. That the evolution of human society is in general characterised by such increasing specialisation of social function stands beyond all doubt. We can have no better example of it than the differentiation between the leech, sorcerer, and priest which has occurred in the history of medicine, magic, and religion. It is a question, however, whether increasing specialisation is characteristic of evolution throughout, or whether it is not rather a necessary feature, I should like to call it even a necessary evil feature, of the middle stages of evolution. I believe that there are now becoming apparent in many departments of social life (I recognise it especially in that of science) indications that specialisation can be carried too far, and that with further advance we may come again to those close interrelations between the different aspects of human culture which are characteristic of its earlier stages.

The Relations between Medicine and Religion.

I will conclude these lectures by considering briefly whether this movement contrary to, or across, the growth of specialisation is not illustrated by the relations between medicine and religion.

In my lectures of last year I considered briefly the part taken by faith and suggestion in the success of the measures by which the ruder forms of human society have endeavoured to overcome the effects of disease. It is the firm belief of savage and barbarous peoples in the efficacy of the rites carried out by leech, sorcerer, and priest which is the most frequent cause of their success. As medicine has progressed and has been differentiated from magic and religion, this play of psychical factors has not ceased. Few can now be found who will deny that the success which attended the complex prescriptions and most of the dietetic remedies of the last generation was due mainly, if not entirely, to the play of faith and suggestion. The salient feature of the medicine of to-day is that these psychical factors are no longer allowed to play their part unwittingly, but are themselves becoming the subject of study, so that the present age is seeing the growth of a rational system of psycho-therapeutics. One feature of this system which is already becoming clear is that it must take account of agencies which have till now been held to be the function of the priest rather than of the physician. If medicine is to maintain its hold on certain aspects of disease which should come properly within its sphere, it must find that it has much to learn from the priest, if, indeed, some kind of collaboration between the two is not often desirable. A striking feature of the last twenty years in this country is the frequent combination of priest and physician in one person, while in America a regular system of collaboration between the two has come into being in what is known as the Emmanuel movement.[15]

As medicine comes to extend its scope to the wider study of disorder of the mind and reaches a higher recognition of the part taken by psychical factors in the causation and treatment of disease, not only will the work of the physician be found to overlap the functions of the priest but also those of the teacher, the jurist, the moralist, the social reformer. Just as there are problems and individual cases of disease which need the collaboration of priest and physician, so are there cases in which the physician, the teacher, the moral and social reformer, can help one another far more profoundly and successfully than they have done in the past.

The study of the latest phase of the history of medicine shows us a limit to the increasing specialisation of function as a character of social evolution. The relations which seem to be coming into existence between medicine and religion resemble in some degree those which we have seen to characterise the earlier phases of its history. They differ chiefly in that the later phase recognises explicitly and is learning to understand a set of conditions which were once allowed to play their part unregarded and unstudied. In the domain of the medicine of the mind—and its scope is far wider than is usually supposed—the course of history seems to be showing us that the close inter-dependence of different departments of human culture will be just as much a character of its latest and its highest phase as it was characteristic of its earliest and its lowest.

[15] See "Religion and Medicine," by E. Worcester, S. McComb, and I. H. Coriat, London, 1908.

OBSERVATIONS WITH ANTITETANUS SERUM IN THE MONKEY.

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IN the course of inquiries regarding the treatment of tetanus, it seemed desirable to the Tetanus Committee, formed under the chairmanship of Surgeon-General Sir David Bruce, to test upon monkeys the relative efficacy of the several routes by which the antitetanus serum might be injected. With that object the following series of experiments was undertaken. The monkeys employed were of various species, for the most part *Macacus rhesus* and *Callithrix*, and also less commonly *Macacus cynocephalus*, and the Jew and ringtail. There is no evidence that these several species differ one from another in their susceptibility to the tetanus toxin. Further, it is known that the anthropoid orang and the baboon are similarly susceptible.

The plan of experiment was to inoculate in the same way each animal with a like dose of toxin, and then, after the outbreak of tetanic symptoms, to inject a like dose of antitetanus serum by one or other of the following several routes: (1) subcutaneous, (2) intramuscular, (3) intravenous, (4) lumbar intrathecal, (5) bulbar intrathecal, (6) cerebral subdural. The period elapsing between the inoculation with the toxin and the injection of the serum was arranged to be similar for separate sets of experiments in which the different routes of injection of the serum were employed.

The toxin used throughout the series was the same, a sample kindly supplied by Dr. MacConkey, of the Lister Institute. As tested upon mice it had a virulence giving 0·001 mgm. as the minimal lethal dose per grm. mouse. Control experiments with it on monkeys of the species used showed that the susceptibility of these animals to it was somewhat more than four times as great as that of the mouse. The smallest dose of toxin to which the control experiments in monkeys were carried still proved fatal, although the animal succumbed then only after a relatively lengthy period—namely, on the tenth day from inoculation. That dose was 0·25 mgm. per kilo. monkey. The control experiments with the toxin were made both at the beginning and at the end of the series of experiments undertaken, and no change in the virulence of the toxin was then found.

The dose chosen for inoculation of the monkeys on which the relative efficacy of the routes of administering the serum was to be tested was in all experiments the same—namely, 2 mgm. per kilo. monkey, that is, M.L.D. for monkey × 8. The site and manner of inoculation was also in all cases the same—namely, the outer head of the gastrocnemius muscle in the region of the "nervous equator" of the muscle.

The normal course of events after this dose in the untreated monkey is as follows:—

About 30–36 hours elapse without symptoms of any kind, and then a slight flexion of the toes of the inoculated limb appears; the flexion is not irregular and spasmodic but steady and enduring. Some 6–12 hours later the corresponding ankle develops some extension (i.e., plantar flexion of foot) similarly steady and enduring. Then follows some postural extension of the corresponding hip, often with slight postural extension of knee. During the third day after inoculation the fore-limb of the same side as the affected hind-limb usually begins to exhibit an impairment in use, the animal having difficulty in feeding itself with that hand; this is due not to any inability of the hand but to slight steady postural extensor spasm at the shoulder, and sometimes, though slighter, at elbow as well. There may be at this stage some tenseness of the muscles of back and abdomen on the side of the affected limbs. About the end of the third day slight incipient locking of the jaw is usually detectable. The mouth in feeding is opened less freely than normal, as can be detected by giving the animal food from which it is accustomed to tear off a large piece, such as an apple. With soft food the symptom may be unnoticeable at this stage. The jaw difficulty rapidly increases. Retraction of the head commonly appears. The extensor postural spasm of hind- and fore-limb is all the while becoming more marked. The jaws on the fourth day are tightly clenched or only allow a slight nibbling of food. Salivation and often difficulty in swallowing appear. At the end of the fourth day, or on the fifth, general tetanus is developed in the sense that all four limbs are in rigid postural extension, there are opisthotonos and retraction of neck, and the jaw is shut completely. Death occurs usually late in the fourth or at some time on the fifth day.

The antitetanus serum employed was obtained in part from the Lister Institute, in part from Messrs. Burroughs and Wellcome. The dose of it administered was throughout the comparative experiments the same—namely, 2000 U.S.A. units per kilo. of monkey. This quantity was injected invariably as a single dose. The time allowed to elapse between inoculation with the toxin and the injection of the serum varied between 47 hours and 78 hours, and was similar for animals taken as a comparison group on which to test the relative efficacy of the different routes of serum injection. The injection of the antitetanus serum was in every case subsequent to the outbreak of the initial symptoms of tetanus.

Subcutaneous Injection of the Serum.

The site chosen for injection of the serum subcutaneously was in all cases the flank on the side corresponding with the inoculated hind-limb, the limb in which the initial symptoms first made their appearance. The results obtained by this injection are given in the following tabular statement (Table I.):—

TABLE I.—*Subcutaneous.*

No.	Species of monkey.	Interval from toxin inoculation to A.T. serum injection.	Result. Death	Result. Recovery.	No.	Species of monkey.	Interval from toxin inoculation to A.T. serum injection.	Result. Death	Result. Recovery.
1	Rhesus.	47 hrs.	8 dys.	—	14	Rhesus.	53 hrs.	7 dys.	—
2	,,	48 ,,	7½ ,,	—	15	,,	54 ,,	5¾ ,,	—
3	,,	50 ,,	7½ ,,	—	16	,,	56 ,,	6¾ ,,	—
4	,,	50 ,,	—	R.	17	,,	66 ,,	6½ ,,	—
5	,,	50 ,,	8 dys.	—	18	,,	66 ,,	5 ,,	—
6	,,	51 ,,	7 ,,	—	19	,,	66 ,,	7 ,,	—
7	Sooty.	51 ,,	7½ ,,	—	20	Ringtail.	68 ,,	4½ ,,	—
8	Rhesus.	51 ,,	7 ,,	—	21	Rhesus.	68 ,,	5¼ ,,	—
9	,,	50 ,,	6¾ ,,	—	22	,,	70 ,,	5½ ,,	—
10	,,	52 ,,	6¼ ,,	—	23	Sooty.	70 ,,	—	R.
11	,,	52 ,,	6½ ,,	—	24	Callithrix.	74 ,,	5½ dys	—
12	,,	52 ,,	7 ,,	—	25	Rhesus.	78 ,,	5¼ ,,	—
13	Callithrix.	53 ,,	6½ ,,	—					

Intramuscular Injection of the A.T. Serum.

The site chosen for intramuscular injection was always the inner hamstring muscle, semimembranosus, of the limb that had been inoculated with the toxin. To make absolutely certain that the serum was actually inserted into the fleshy substance of the muscle a minute skin incision was made exposing the flesh of the muscle, and into this the serum was

TABLE II.—*Intramuscular.*

No.	Species of monkey.	Interval from toxin inoculation to A.T. serum injection.	Result. Death	Result. Recovery.	No.	Species of monkey.	Interval from toxin inoculation to A.T. serum injection.	Result. Death	Result. Recovery.
1	Rhesus.	47 hrs.	—	R.	14	Rhesus.	53 hrs.	6½ dys	—
2	,,	48 ,,	6¾ dys	—	15	,,	54 ,,	9 ,,	—
3	,,	50 ,,	7½ ,,	—	16	Callithrix.	56 ,,	8½ ,,	—
4	,,	50 ,,	—	R.	17	,,	66 ,,	7½ ,,	—
5	,,	50 ,,	6½ dys	—	18	Rhesus.	66 ,,	7 ,,	—
6	,,	51 ,,	7½ ,,	—	19	,,	66 ,,	6½ ,,	—
7	Callithrix.	51 ,,	7 ,,	—	20	Ringtail.	68 ,,	5½ ,,	—
8	Rhesus.	51 ,,	7¼ ,,	—	21	Rhesus.	68 ,,	7 ,,	—
9	,,	51 ,,	8½ ,,	—	22	,,	70 ,,	5 ,,	—
10	,,	52 ,,	6¾ ,,	—	23	,,	70 ,,	5¼ ,,	—
11	,,	52 ,,	—	R.	24	Callithrix.	74 ,,	5¼ ,,	—
12	,,	52 ,,	7½ dys	—	25	Rhesus.	78 ,,	5½ ,,	—
13	Callithrix.	53 ,,	9½ ,,	—					

injected, and it could be seen that the whole of it was received by the muscular tissue. The results following this injection are exhibited in Table II.

Intravenous Injection of A.T. Serum.

Intravenous injection of the serum was made by the femoral vein of the leg not the seat of inoculation by the toxin. By a small skin incision the vein was exposed in the upper part of the thigh and the serum injected through a hollow needle inserted into the vein. The serum could be seen through the venous wall while injected. On withdrawing the needle the prick in the vein-wall closed, and there was no escape of serum or blood. (Table III.)

TABLE III.—*Intravenous.*

No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result. Death	Result. Recovery.	No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result. Death	Result. Recovery.
1	Rhesus.	47	—	R.	14	Rhesus.	53	8½ dys	—
2	,,	48	10 dys	—	15	,,	54	—	R.
3	,,	50	—	R.	16	Callithrix.	56	7½ dys	—
4	,,	50	—	R.	17	,,	66	6½ ,,	—
5	,,	50	9 dys	—	18	Rhesus.	66	7½ ,,	—
6	,,	51	6 ,,	—	19	,,	66	7 ,,	—
7	Callithrix.	51	—	R.	20	Callithrix.	68	7 ,,	—
8	Rhesus.	51	7½ dys	—	21	Jew.	68	8 ,,	—
9	,,	51	—	R.	22	Rhesus.	70	7½ ,,	—
10	,,	52	8½ dys	—	23	,,	70	—	R.
11	,,	52	7¾ ,,	—	24	Callithrix.	74	5 dys	—
12	,,	52	9 ,,	—	25	Rhesus.	78	5½ ,,	—
13	Callithrix.	53	8 ,,	—					

Spinal Intrathecal Injection in the Lumbar Region.

For these injections the animal was anæsthetised and a limited laminectomy performed in the lower lumbar region. The serum was injected by a needle-syringe through the spinal theca, which in the monkey is transparent enough to allow the serum to be easily traced by the eye after introduction into the theca and its course within the theca followed. The quantity introduced—namely, about 3 c.c., depending on the weight of the individual animal—could be seen to run rapidly both forward and backward within the theca. Usually the quantity of subdural fluid withdrawn before introducing the serum did not amount to 1 full c.c. After the serum had been injected the needle was allowed to remain unwithdrawn for about two minutes; if withdrawn directly the injection had been completed there was a constant tendency for some of the serum to run back

TABLE IV.—*Lumbar Intrathecal.*

No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result. Death	Result. Recovery.	No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result. Death	Result. Recovery.
1	Rhesus.	47	—	R.	14	Rhesus.	53*	—	R.
2	,,	48	—	R.	15	,,	54	—	R.
3	,,	50	—	R.	16	Callithrix.	56	9 dys	—
4	,,	50	9½ dys	—	17	,,	66	11 ,,	—
5	,,	50*	—	R.	18	Rhesus.	66*	7 ,,	—
6	Callithrix.	51	—	R.	19	,,	66	—	R.
7	,,	51	—	R.	20	Callithrix.	68	—	R.
8	Rhesus.	51	—	R.	21	Jew.	68	9 dys	—
9	,,	51*	8 dys	—	22	Rhesus.	70	—	R.
10	,,	52	—	R.	23	,,	70	7¾ dys	—
11	,,	52	7½ dys	—	24	Callithrix.	74	6½ ,,	—
12	,,	52*	—	R.	25	Rhesus.	78	5½ ,,	—
13	Callithrix.	53	9 dys	—					

and escape from the theca by the puncture-hole. The wound was then closed with a few stitches, and its healing met with no difficulty. Table IV. is a statement of the results of these injections. In five of the experiments the

spinal cord was purposely slightly pricked on its dorsal surface by the needle point; this was done on account of a suggestion that the wounding of the cord, necessitating local rupture of arachnoid and pia mater as it must, might facilitate access of the antitoxin to the internal structure of the cord. The wounding of the cord gave no obvious symptom beyond a twitching of muscles locally at the time of the wounding. The experiments done in this way are marked with an asterisk.

Bulbar Intrathecal Injections.

These injections were made by exposing under anæsthesia the atlanto-occipital membrane, withdrawing through the membrane with a needle-syringe about 2 c.c. of the subdural fluid, and then injecting through the needle the quantity of A.T. serum required, usually 2–3 c.c. The injection has to be made quite slowly, and even then considerable rise in frequency of pulse and respiration ensues during the latter part of the injection and is liable to be succeeded by failure of respiration. The membrane is transparent and the serum injected can be seen to descend in part into the spinal theca, although the needle is directed forward. The healing of the wound offered no difficulty. The results obtained are shown in the following tabular statement. (Table V.)

TABLE V.—*Bulbar Intrathecal.*

No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result.		No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result.	
			Death	Recovery.				Death	Recovery.
1	Rhesus.	47	—	R.	11	Rhesus.	68	8 dys	—
2	,,	48	—	R.	12	,,	68	5¾ ,,	—
3	,,	50	—	R.	13	Callithrix.	68	7 ,,	—
4	,,	51	—	R.	14	Rhesus.	68	—	R.
5	,,	52	—	R.	15	,,	70	—	R.
6	Callithrix.	53	—	R.	16	Callithrix.	70	6½ dys	—
7	,,	54	9½ dys	—	17	,,	70	—	R.
8	Rhesus.	56	—	R.	18	Rhesus.	70	—	R.
9	,,	66	—	R.	19	,,	74	6 dys	—
10	,,	66	—	R.	20	Callithrix.	78	5½ ,,	—

Injections of A.T. Serum under the Cerebral Dura Mater.

These injections were all made in the parietal region over the hemisphere of the side opposite to the inoculated limb. A small trephine hole was opened beneath the upper part of the temporal muscle and the needle of the syringe thrust through the dura mater; the needle was a curved one and was so passed as not to wound the brain, except in three cases, one accidental and two intentional, the two latter with the object of making the injection a subarachnoid one. The healing of the wound offered no difficulties. The results are shown in the following tabular statement. The experiments in which the cerebral cortex was pricked by the needle are marked with an asterisk. (Table VI.)

TABLE VI.—*Cerebral Subdural.*

No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result.		No.	Species of monkey.	Hours between toxin inoculation and A.T. serum injection.	Result.	
			Death	Recovery.				Death	Recovery.
1	Rhesus.	52	7 dys.	—	6	Rhesus.	56	6½ dys	—
2	Sooty.	53	5½ ,,	—	7	Jew.	66	5½ ,,	—
3	Rhesus.	54	6½ ,,	—	8	Ringtail.	66*	5½ ,,	—
4	Callithrix.	54	6 ,,	—	9	Rhesus.	68	6 ,,	—
5	,,	56*	6 ,,	—	10	Sooty.	68*	5 ,,	—

Duration of Prophylactic Effect.

A few experiments were made on prophylaxis. These sought to ascertain how long a prophylactic dose of A.T. serum, the same in amount proportionately as that usually employed for prophylaxis in man, protects monkeys against a subsequent dose of tetanus toxin similar to that used in the above experiments—viz., 2 mgm. per kilo. The dose of anti-tetanic serum was therefore 20 U.S.A. units per kilo., and the subsequent dose of toxin was 8 times the M.L.D. for monkey. The time elapsing between the prophylactic dose of serum and the toxin inoculation varied in the individual experiments between 3 and 15 days. In five instances, the toxin inoculation having failed to produce more than merely local tetanus, the inoculation with toxin was repeated later without any intervening re-dosage with serum. The results are shown in the following tabular statement (Table VII.):—

TABLE VII.

No. of monkey.	No. of days between prophylactic dose of A.T.S. and inoculation with T. toxin.	Result.
1	3	No tetanus developed.
2	4	Slight local tetanus; recovery.
,,	Reinoculated with toxin on 35th day.	Death with general tetanus in 9 days.
3	5	Local tetanus; recovery.
4	6	,, ,,
,,	Reinoculated with toxin on 50th day.	Death with general tetanus in 10 days.
5	7	Local tetanus; recovery.
6	7	,, ,,
,,	Reinoculated with toxin on 20th day when still affected by the local tetanus.	No increase of the local tetanus; recovery.
7	8	Local tetanus; recovery.
8	9	,, ,,
,,	Reinoculated with toxin on 45th day.	,, ,,
9	10	,, ,,
,,	Reinoculated with toxin on 40th day.	,, ,,
10	15	Death of general tetanus in 8 days

Two control animals inoculated similarly with the like dose of the tetanus toxin, but without any prophylactic dose of the A.T. serum, died in four and five days respectively. The experiments, so far as they go, tend to show that the prophylactic dose of serum prevented the dose of toxin producing general tetanus when inoculated up to the eleventh day after the prophylactic serum, although it did not for the latter part of the time prevent the toxin dose in question producing some local tetanus. In the observations on re-inoculation the protective effect of the development of local tetanus has to be reckoned with.

AN ANALYSIS OF RECENT TETANUS STATISTICS.

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THE tetanus statistics under consideration deal with the period of 1916 and early part of 1917. 640 cases occurring in British hospitals in England and France have been reviewed. The cases occurring in England were collected by Sir David Bruce and those in France by Sir William Leishman. The total mortality is 50·8 per cent. and compared with the average mortality of the wars of pre-serum days the results are extremely encouraging. That in a great degree this diminution is due to prophylaxis will be shown to be beyond question, and a small part may possibly be ascribed to better methods in dealing with wounds and the consequent improvement in the general condition of the patient.

It is a matter of great difficulty in the absence of control to ascertain whether in addition to the two before-mentioned agencies the specific treatment with serum plays any part in the reduction of tetanus mortality. In the first instance it is necessary from information obtained from pre-antitoxin days to establish how far tetanus following prophylactic antitoxin injection resembles the older type of disease

Secondly, if a modification of the disease be established, the new form of tetanus must be accounted for in any comparison between recent and ancient statistics.

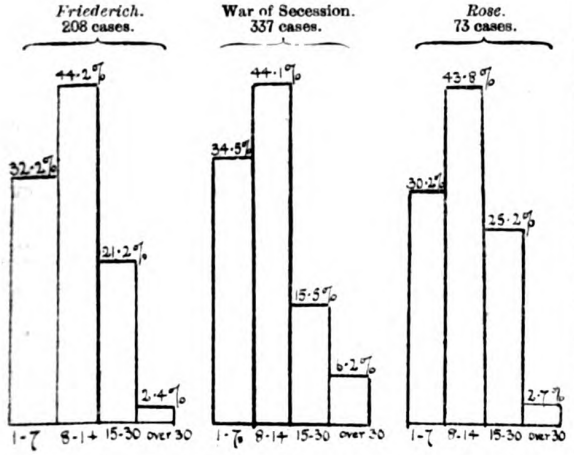
Tetanus in Pre-Serum Days.

The classical types of tetanus must be first considered. The symptomatology of tetanus in pre-serum days is characterised by the initial symptom of trismus. Rose, in his monumental work on tetanus, states that he has never seen a case of tetanus that did not commence with trismus, and that he could find no authenticated case where trismus as an initial symptom was excluded. This is too sweeping a statement. A small number of cases are recorded with history of local onset generally going on to secondary trismus, but they were cases of very great rarity. A certain number of cases of what was called localised tetanus are recorded in the reports on the War of Secession, but the term was used to designate not tetanus localised to the segmental wound area, but tetanus confined to trismus without tendency to spread.

The classification of forms of tetanus was then based on the rapidity and completeness with which trismus developed. Rose distinguishes "vehementes," in which the jaws cannot be separated and the complete development of symptoms takes place within 24 hours; "completi lenti," in which there is complete closure of the jaws and the symptoms take more than 24 hours to reach their maximum; "incompleti lenti," cases in which the jaws can be opened a varying degree either by the patient or the observer and the symptoms develop slowly. Other classifications have been proposed by various authors, but all of them assume the occurrence of initial trismus.

The incubation period of tetanus also followed a curve which is surprisingly consistent in three groups of statistics—

TABLE I.



those of Friederich, of the War of Secession and of Rose. (Table I.). Nor do the figures of the 1870 war differ from this type. (Table II.) About half the cases develop during the second week after the wound. About one-third develop during the first week. The cases of over 15 days' incubation form about one-fifth of the total number.

As the incubation period increases the distribution of the three types of tetanus among the cases shows a diminution of the percentage of the completi type and progressive increase of the incompleti. (Table III.)

The mortality of tetanus can only be safely deduced by reference to groups of military statistics. Collections made from medical literature are probably valueless on account of the tendency to publish successful cases. Thus Friederich in 1838 collected 252 cases with a mortality of 50·79 per cent., Curschmann in 1889 collected 912 cases with a mortality of 44·6 per cent., and Curling collected 128 cases with 54·5 per cent. mortality. On the other hand, Poland found in unselected groups of cases from civil hospitals 63 cases at Guy's with 84·2 per cent. mortality, and 48 cases at Glasgow, mortality 87·5 per cent.; whilst Rose in the Bethanien clinic had 100 cases with 86 per cent. mortality. In the War of Secession 505 cases had a mortality of 89·3 per cent. In 1870–71 the German mortality was 90 per cent. in 350 cases, or in Richter's collection of 228 observed cases 82 per cent. In the Crimea 29 cases had a mortality of 90 per cent., and Larrey, in the Napoleonic Egyptian campaign with 42 cases, recorded 82 per cent. mortality.

The values for the relation of the incidence of mortality to the incubation period in the small number of statistical collections of pre-serum days showed a considerable degree of uniformity. Table IV. gives the results from an analysis of the statistics of Richter on cases occurring in 1870–71, those of the Bethanien Hospital and those collected by Poland. These figures are all in accordance with the law that the later tetanus develops the milder the course of the

TABLE II.

Richter. Incubation of tetanus cases, 1870–71.

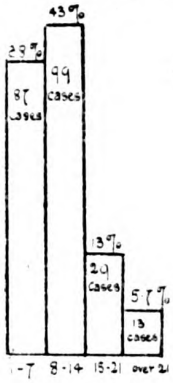
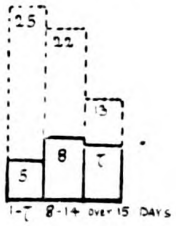


TABLE III.

Incubation of complete and incomplete tetanus. Based on *Rose's* statistics. Dotted lines = complete. Continuous lines = incomplete.



disease. Two factors combine to produce this result. Firstly, as shown in Table III., the percentage of incomplete cases increases with the length of the incubation period, but the specific gross mortality for complete cases appears from Rose's statistics to be 85 per cent., whilst that of incomplete cases is 45 per cent. Secondly, a progressive diminution of mortality goes on with the lengthening of the incubation period for each of the two categories.

From this survey of the incidence and mortality of tetanus in pre-serum days a standard of reference is established which allows the influence of prophylaxis to be distinguished from that of treatment in the new type of tetanus of the present war.

Present Investigation.

The clinical material under review consists of 316 cases occurring in home hospitals, all of which have been selected from a larger number as possessing sufficient data for the purposes of this inquiry, and 360 cases reported from British hospitals in France, of which latter 60 are without clinical notes. In addition, two sets of cases numbering 231 and 173 reported by Sir David Bruce are considered.

The clinical information does not admit of classification of the cases into the older divisions of vehementes, completi lenti, and incompleti lenti, and hence an invaluable standard of comparison is lost. The cases are for the present purpose divided into three types—those with initial trismus corresponding to the tetanus of pre-serum days, though, as will appear later, modified by prophylaxis, and two new types, those with delayed trismus and those with local tetanus. These latter two types, certainly those of local trismus, constitute a new disease and must be considered separately from cases of initial trismus if any conclusions as to the value of serum treatment by comparison with older statistics is to be arrived at.

Initial Trismus Cases: Lengthening of Incubation Period.

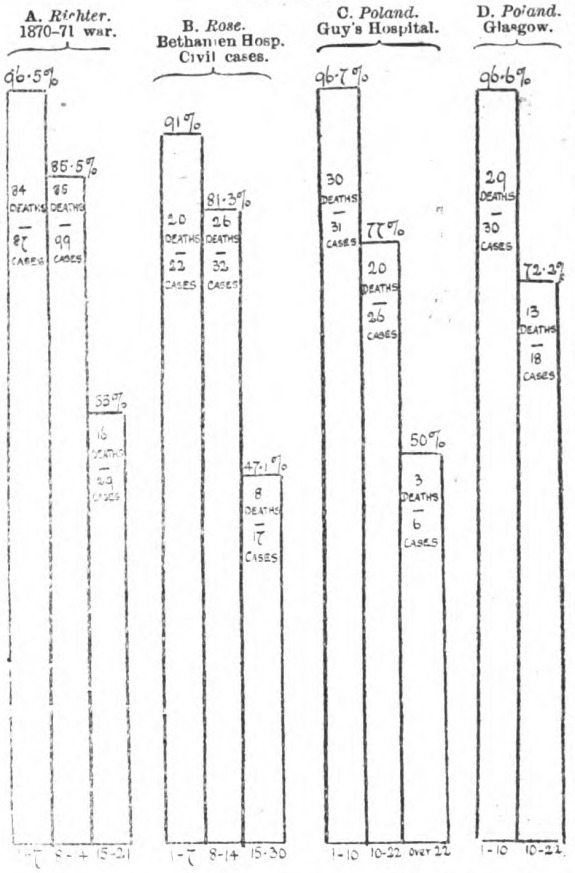
Table V. shows the incidence in relation to the incubation period of 269 cases of initial trismus occurring in England and France among the British wounded. On comparison with Table II. it will be noted that whereas in 1870 only 5·7 per cent. of the cases appeared after 21 days there are now 30·4 per cent. with an incubation period of more than three weeks. During the first three weeks a lengthening of the average incubation period is also present, though less striking.

The most probable explanation of this lengthening of the incubation period is that it is due to prophylactic treatment, and this is to some extent bore out by the three diagrams in Table VI.; they are taken from sets of cases occurring in English hospitals, and consequently exaggerate the lengthening of the incubation period, as early cases do not tend to cross the Channel. Fig. A is compiled from Sir David Bruce's statistics for 1914 when few of the cases had received prophylactic treatment and most nearly resembles the curves of pre-serum days. Fig. B is also from Sir David Bruce's statistics for 1915, when prophylaxis had been more enforced, and 77 of 173 cases were reported as protected; the lengthening of the incubation period is here more marked. Fig. C is taken from statistics of 1916, all the cases having received a prophylactic injection, and shows the most marked delay of the incubation period. Table VII. affords further confirmation that the delay of incubation is due to prophylaxis. The diagram from 47 non-protected cases occurring in the present war closely resembles the diagrams of incidence taken from pre-serum days.

Initial Trismus Cases: Mortality.

The relation between mortality and incubation would be expected to reflect the law of the inverse relation of

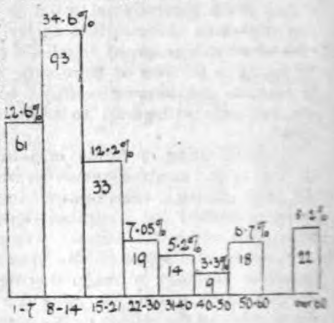
TABLE IV.



mortality to incubation, and Table VIII. fully illustrates this. It will be noted that to a very great extent the gross diminution of mortality compared with that in the 1870 campaign (Table IV.) is due to the prolonged incubation period. If, however, the first three week periods are compared it will be found that during the first two weeks the mortality in the 1916 cases is slightly below that of 1870—i.e., 75·5 per cent. and 70 per cent., as against 96·5 per cent. and 85·5 per cent.—whereas in the third week the 1916 mortality is slightly above that of 1870. This is precisely what we should expect on the hypothesis that the slight initial diminution of mortality is due to our improved methods of rendering first aid to the wounded and abstention from drastic operations. After the first two weeks when the cases of exhaustion and post-operative shock become fewer, the mortality from both statistics becomes practically the same in the third week. The same remarks hold true if Table VIII. be compared with the Bethanien and Guy's and Glasgow statistics in Table IV. On the hypothesis that the slight diminution of mortality is due to therapeutic serum treatment alone, there would appear to be no reason to account for serum treatment being less efficacious in the third week than in the two preceding weeks. It must at any rate be conceded that if the slight initial decrease of mortality is all that can be claimed for serum treatment the result is not very encouraging.

TABLE V.

Incubation of initial trismus cases in British wounded—England and France. 289 cases.

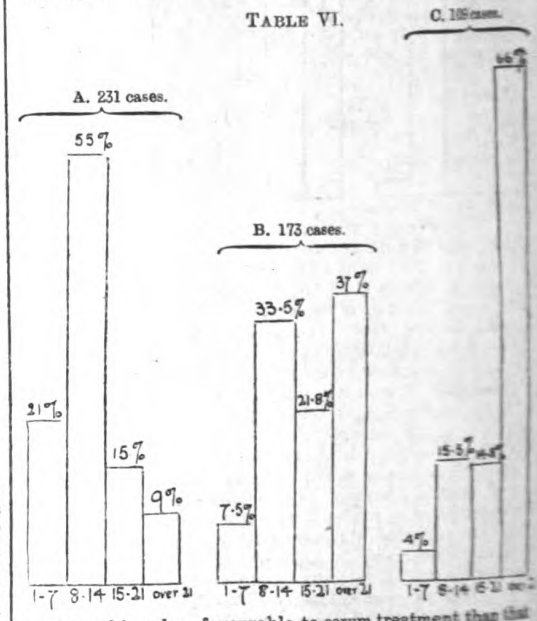


The statistics from non-protected cases, though too small to be decisive, also strongly support the view that apart from prophylaxis serum treatment has no influence on mortality. (Diagram B, Table VII.) These cases, with two exceptions, did not arise from wounds received in action; they comprise cases of slight injury which was not considered sufficiently severe to call for a prophylactic injection—cases of trench foot and cases following operation for non-traumatic lesions. They can therefore be most fairly compared with cases of tetanus arising in civil hospitals in pre-serum days. The statistics of Rose and those of Poland for Guy's Hospital show a combined mortality of 79 per cent. The mortality for the British non-protected cases is 75 per cent. The difference is therefore trivial.

Cases of Late Trismus.

The separate consideration of cases of late trismus is justified by a consideration of Diagram A, Table IX., showing the enormously increased incubation period. The curve showing the relation of mortality to incubation (Diagram B)

TABLE VI.



is, if anything, less favourable to serum treatment than that of the initial trismus group; the difference in the gross mortality between initial trismus, 62·5 per cent., and late trismus, 42·25 per cent., is obviously due to the high percentage incidence of late cases in the latter group.

Table X. shows the percentage incidence and mortality of all cases of trismus both initial and late.

TABLE VII.

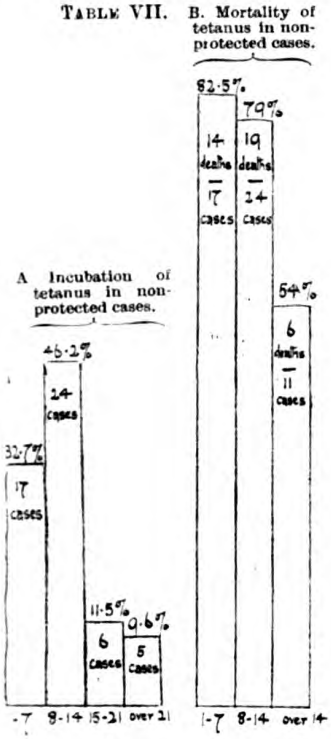


TABLE VIII.

Mortality of initial trismus cases in English and French hospitals.

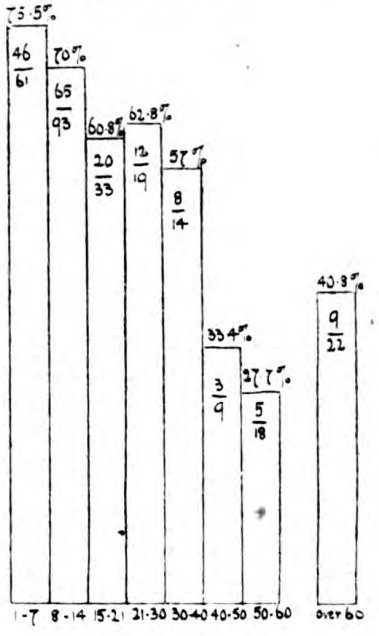
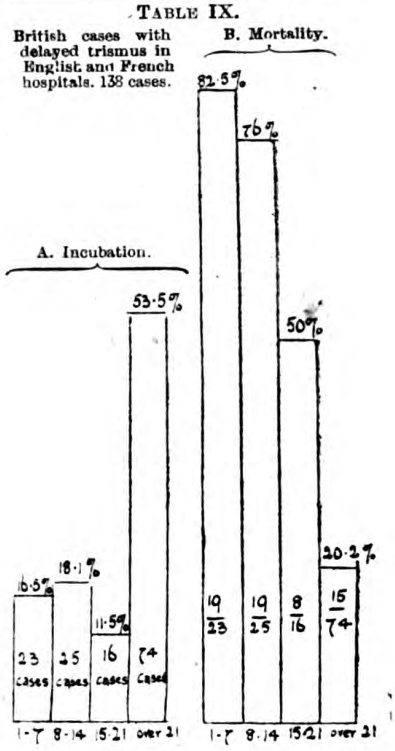


TABLE IX.

British cases with delayed trismus in English and French hospitals. 138 cases.



Local Tetanus.

Local tetanus appears to have no mortality; four cases of death when only true local tetanus has occurred have been found in the statistics, but in the absence of more definite evidence than their clinical notes afford there does not appear to be sufficient reason to ascribe death to tetanus.

Table XI. shows the relation of the occurrence of local tetanus to the incubation period (Diagram A) and Diagram B the relative percentage of local tetanus in all types of cases. The effect of the dilution of statistics of tetanus with local tetanus is shown in Table XII.

The Curative Action of Serum.

To sum up, there appears no evidence of any appreciable diminution of the mortality of tetanus to be derived from an analysis of the statistics of incidence and mortality when allowance is made for the modification of the disease due to prophylaxis.

Another infallible sign of a curative action of serum should be furnished by an examination of the time after the onset of symptoms at which treatment was begun in fatal and cured cases. In animal experiments the interval of time after toxin injection during which antitoxin can act

TABLE X.

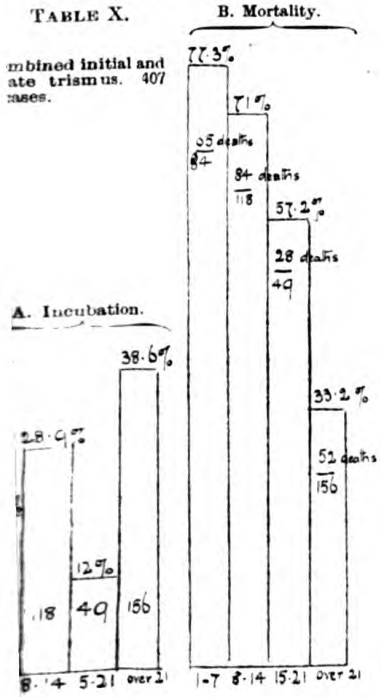


TABLE XI.

Case of local tetanus without trismus.

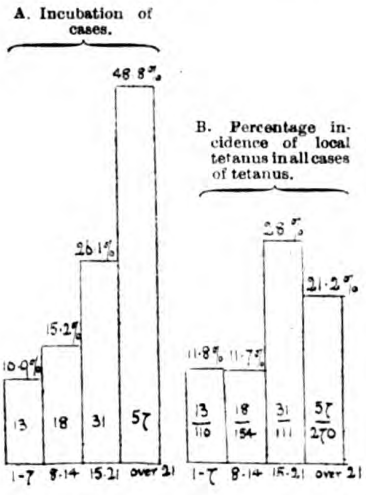
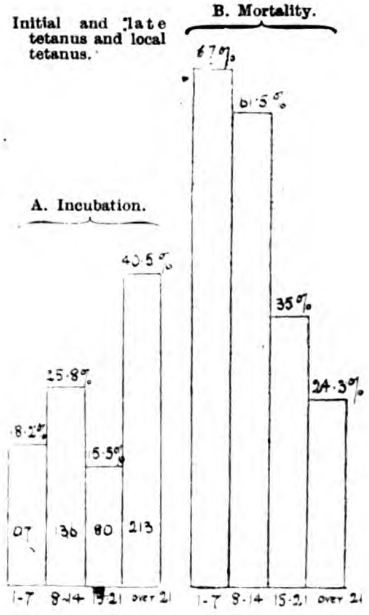


TABLE XII.

Initial and late tetanus and local tetanus.



effectively admits of very accurate definition. Sir David Bruce has pointed out that an examination of the gross statistics shows no such relation. As it might be objected that in slighter cases there is a tendency on the part of the doctor to delay treatment, 50 cases of tetanus with initial trismus have been selected. All of them, as far as the notes allow evaluation of the symptoms, were cases of similar gravity. Again, no evidence could be elicited from this rather laborious inquiry. The periods before beginning of treatment varied from 30 minutes to three days, and no relation between their duration and the result of the disease could be established.

It might be anticipated that if antitoxin had any curative influence a relation would be found between the amount of serum administered and the result of the case. The total amount of serum administered in different cases cannot be compared, as with a longer illness, and hence a better chance of survival, the amount of serum dispensed will be greater. If the average daily dose be considered, no relation between its size and cure can be established. Sir David Bruce found in 165 cases 104 were treated with a daily dose of under 5000 units with 49 per cent. mortality, and 61 received over 5000 units with 53 per cent. mortality.

To get rid of the objection that the milder cases received the smaller dose the daily serum dose was estimated in the 50 cases of initial trismus already mentioned. The analysis showed that cases recovering received on an average 5500 units daily, while the dose for fatal cases averaged 7000 units daily.

The statistics were worthless for any attempt to discover the influence of different methods of administration. In the home hospitals the majority of the cases treated by the subcutaneous and intramuscular methods were of a mild character.

In view of the wealth of English statistics there is little to be gained at present by seeking additional evidence on the effect of serum treatment among the records of other belligerents. Only papers dealing with relatively small groups of cases, chiefly from single clinics, are at present available, and none of them attempt to analyse the type of case dealt with from the standpoint of the incubation period.

Experimental Work in Regard to Treatment by Serum.

With so little encouragement from clinical evidence the support afforded by experimental pathology requires to be scrutinised critically. The possibility of neutralising toxin in an experimentally injected animal by a timely injection of antitoxin is admitted on all sides to be subject to the condition that a sufficient quantity of antitoxin has not already entered into the central nervous system. The superiority of intravenous and intrathecal methods of injection over the slowly absorbed subcutaneous and intramuscular is a necessary corollary, and has been repeatedly established experimentally. The failure of serum in man means primarily that by the time symptoms of tetanus appear a sufficiency of toxin is already in the nervous system in such cases as would end fatally whether treated or not, whereas in the milder cases sufficient toxin to cause fatal tetanus is not manufactured. There are, doubtless, many other factors to be considered; thus in the experimentally injected animal the injection mass of toxin lies loose in the tissues, whereas in man the tetanic focus is often shut off by a wall of inflammatory tissue and inaccessible to antitoxin, whilst toxin can reach the central nervous system from the focus by direct entry into contiguous nerves. To give information of direct value on the question of treatment it appears to be desirable to begin experimental work on antitoxin *de novo* on animals with septic wounds infected with tetanus culture.

The recent work done for the War Office Tetanus Committee by Symes, in that it tends to confirm the views of Meyer and Ransom that the passage of toxin up the nerve takes place by the nerve fibres rather than by the perineural lymphatics, should make the chances of successful treatment of absorbed toxin less hopeful. During the past year some experiments of Professor Sherrington showing that intrathecal administration of antitoxin is more efficient than intravenous in the monkey have revived the hope that a local immunity of parts of the nervous system not already reached by toxin may be established. The results are exceedingly interesting and furnish incontestable evidence that under the conditions of his experimental intrathecal injection of antitoxin he has effected a local immunisation of the bulbar region in which the rest of the cord does not appear to share. It is, however, by no means evident that these results can be directly interpreted as an argument for injection of antitoxin into the lumbar cisterna of man, and, as a matter of fact, clinical evidence does not show a similar superiority of the low intrathecal injection in man over the intravenous method. Thus Irons, in a series of unselected cases, found with 16 acute cases treated by the lumbar method the mortality was 81·2 per cent., and with 11 acute cases treated intravenously the mortality was 72 per cent. The chronic cases were too few in number to admit of a fair comparison.

A CASE OF SPLANCHNIC TETANUS.

BY H. BURROWS, M.B., B.S. LOND., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C. (T.F.).

THE following case is worthy of record as an example of splanchnic tetanus, ending fatally, and yet unaccompanied by trismus or general convulsions.

The patient, Private H. A., was wounded on June 30th 1917, and admitted to —— General Hospital, under the care of Major H. A. Moffat, on July 3rd. There were three septic shell wounds—in the left arm, left leg, and left thigh respectively. The patient had received a prophylactic dose of 500 units of antitetanic serum on the day of his wound. On the morning after admission to —— General Hospital he was found to have symptoms of infarction of the base of the right lung, with hæmoptysis, pleural friction, and deficient air entry.

July 8th: Wounds not cleaning well. Thigh and buttock wounds dry and sloughy. 9th: Second dose of 500 units of antitetanic serum given subcutaneously. 10th: Carrel-Dakin treatment commenced. 12th: Cough and expectoration much less. Wounds looking more healthy. 18th: More pain in right lower chest. Sputum no longer blood stained, but purulent.

On July 19th (the twentieth day after receipt of the wounds) Major Moffat made the following note: "Does not seem at all well; he is nervous and jumpy; every few seconds neck and chest muscles cause a kind of shrug." Sterno-mastoids and other muscles of the neck were persistently hypertonic, but there was no trismus. An intramuscular injection of 1500 units of antitetanus serum given.

On July 20th there was persistent hypertonus of muscles of neck, including the trapezius on each side. Percussion of these muscles caused them to contract spasmodically. No trismus was present. The muscles of respiration were hypertonic, so that patient could not cough or take a deep breath; and breathing was of the automatic type—that is to say, the respiratory excursions did not vary in amplitude, and there was no expiratory pause. There were no clonic respiratory spasms. There was a slight increase in the frequency of respirations, and a considerable increase in the frequency of the heart beats. Sweating was profuse.

On July 21st patient was much worse. Any attempt to cough or to take water or nourishment caused violent respiratory spasms in which the muscles of the neck and spine took part. Probably there was some pharyngeal spasm also, but the respiratory spasm was so quick of onset and so urgent that it was sufficient to prevent patient altogether from swallowing. There was no trismus, nor was there any involvement of the limbs. The knee-jerks were not increased, there was no ankle clonus, and no tetanus reflex was obtained on tickling the soles of the feet. The patient was very restless, tossing about in bed and throwing off the bed-clothes. His face denoted fear and acute apprehension. It was doubtful whether the spasms were painful or painless. Probably they were not very painful. They caused intense distress through the fear of asphyxia that accompanied them. During the spasms the bowel and bladder acted.

On July 22nd patient became comatose and died. Temperature rose to 106·4° F. before death. It was noticed that the pupils were unequal, the right being larger than the left, but neither was pin-point. The temperature showed a diphasic afternoon rise, the range being: July 3rd–6th: T. 97·6°–100·4°, P. 94–120, R. 22–80. July 7th–8th: T. 98·8°–102° P. 112–120, R. 24–28. July 9th–12th: T. 99°–102°, P. 92–120 R. 20–28. Thereafter the temperature was not above 101° until the rise before death.

The following doses of antitetanic serum were given: subcutaneously, 500 units on June 30th and July 9th; intramuscularly, 1500 units on July 19th, 4500 units on July 20th and 21st.

Post-mortem.—There was a small localised empyema at the base of the right pleura, the adjacent lung being solid. There was an ante-mortem effusion of blood at the base of the

pons, in the cisterna magna, and spreading around the sides of the pons. Portions of the infarcted lung were sent to Captain A. W. Stott, who made the following report: "Bacilli morphologically resembling *B. tetani* grew in broth anaerobically, but failed to produce symptoms of tetanus in a mouse and a rat inoculated subcutaneously with the culture."

There are several points about this case which are of particular interest. In the first place, the symptoms closely resembled those of hydrophobia. Secondly, the total absence of trismus was a remarkable feature, for in splanchnic tetanus even occurring in the modified or local form one would expect to find trismus accompanying the respiratory spasm. The absence of involvement of the limbs also was a striking feature, for the patient tossed his limbs and even fanned himself during the respiratory spasms.

Splanchnic tetanus, as is known, follows infection through wounds of the chest or abdomen. In this case there was no immediate infection in these regions, and one must suppose that it reached the chest by means of the pulmonary infarct. And in spite of the fact that the bacteriological findings were doubtful on this point, I think one is still justified in assuming that the infarct was the place where the fatal toxin was manufactured.

The hyperpyrexia and unequal pupils appearing shortly before death are perhaps attributable to the hæmorrhage around the pons, which doubtless occurred during and as a result of the spasms.

In conclusion, I should like to thank Major Moffat for allowing me to publish the details of the case.

NOTES ON TEN CASES OF TETANUS.

BY REDCLIFFE N. SALAMAN, M.A., M.D. CANTAB.,
CAPTAIN (TEMP.), R.A.M.C.

DURING the 11 months in which I acted as tetanus inspector in the Colchester district there occurred 10 cases of tetanus. The clinical histories are given at the end of these notes, as well as that of a case (7A) which proved not to be tetanus, but was of interest from the point of view of diagnosis.

The cases are all too few to draw any deductions as to treatment, and more especially as to the vexed question of the best route for the administration of antitetanic serum. The object, however, of publishing these notes is to draw attention to certain points which have a clinical interest and value.

Summary of Cases.

Tables I. and II. classify the cases according to the method now used on the revised Tetanus Inspector's Report and give particulars as to prophylaxis and treatment. Four of the 10 cases died, of these:—

CASE 1 had the most acute tetanus and would have died therefrom probably apart from his severe loss of blood and operation.

CASE 4 was suffering from a fourth attack of tetanus of a subacute type; he died in acute spasm eight hours after an intrathecal injection. No explanation is offered, unfortunately a post-mortem examination was not made.

CASE 6.—This patient had a hæmothorax and was very severely injured. The tetanic condition was not acute, but the treatment in the early stages was inadequate. Death was due to broncho-pneumonia and heart failure, and not to tetanus.

CASE 8.—This patient had an intensely acute attack, and would have probably succumbed in any case. Treatment was inadequate in the earliest stage.

Of the cases that recovered none were acute. They reacted rapidly to treatment with antitetanic serum. It is perhaps permissible to say that the life of Case 2 was saved by treatment. As regards the remainder it is very possible that they would have recovered in any case.

Observations on Points of Interest.

Examples of all the types mentioned in Table I. occur; two cases deserve special notice, however: No. 7, in which trismus was the only symptom complained of by the patient or recognised at the time he was seen, and No. 9, in which the tetanic condition was absolutely localised to the group of muscles surrounding the wound. This case would have probably escaped notice had he not been in my own ward at a time when I was particularly on the look-out for this type of tetanus. He was seen by Colonel A. Carless, who agreed in the diagnosis.

Generally there is no difficulty in diagnosing tetanus, but in two of the cases such difficulty did occur, viz., in No. 7 and No. 7A. In the former, as already mentioned, the only symptom was slight trismus associated with loss of the swinging movements of the jaw. In No. 7A there was a greater degree of trismus but no loss of the swinging movement. I had already observed the constancy of this loss of swing in connexion with the trismus of tetanus, but I felt it my duty to give No. 7A the benefit of the doubt and advised active serum treatment. The end-result—complete recovery of opening and swing movement in No. 7, and no alleviation of the condition in No. 7A—confirmed the diagnosis and incidentally the value of this sign.

An effort was made to examine the wounds bacteriologically, but the opportunities were very limited. In Cases 1 and 2 round-end sporing anaerobic bacilli were discovered, and in Case 2 tetanus bacilli were found at the Royal Army Medical College. In Case 2 three examinations of pus from the wound were made—viz., one at the commencement of the treatment, one five weeks later, and a final one four weeks after the second. In the first there were abundant anaerobes, including round-end sporing rods. In the second and third there were no round-end sporers and the amount of other anaerobes present was much less. The suggestion that antitetanic serum may have a bactericidal

TABLE I.—*Classification of Cases.*

	No. of cases.	Mortality per cent.
A. Trismus initial symptoms—		
1. Tetanus with complete closure of jaws (teeth cannot be separated) developing within 24 hours of symptoms	2	100
2. Tetanus with complete closure of jaws, developing in more than 24 hours	—	—
3. With incomplete closure of jaws. Mouth can be partially opened	4	0
B. Trismus occurring after other symptoms have developed	2	50
C. Local tetanus without trismus	2	50

Total mortality = 40 per cent.

TABLE II.—*Details of Cases.*

Case.	Week after wound.	Position of wound.	Type A. 1	2	3	Type B.	Type C.	Route of injection of A.T.S. and quantity. Intra-thecal.	Intra-venous.	Intra-muscular.	Subcu-taneous.	Total.	Prophy-lactic doses. 1 2 3 4	Recovery. No. of days.	Death. No. of days.	Remarks.
1	1	Left shoulder.	+	...	...	...	...	12,500	9,500	6,500	...	28,500	?	...	+ 1	Greatly shocked as result of hæmorrhage and operation.
2	14	Right shoulder.	...	...	+	...	...	22,500	43,500	12,000	23,100	101,100	+	17	...	Severe but not acute case.
3	9	Left arm.	...	...	...	+	...	...	15,000	91,000	...	106,000	+	28	...	...
4	25	Left arm.	...	...	...	...	+	16,500	...	9,000	...	25,500	?	...	+ 3	Acute exacerbation of symptoms following intrathecal injection.
5	1	Scalp.	...	...	+	...	...	...	...	45,000	...	45,000		21	...	...
6	2	Right arm.	...	...	...	+	...	...	24,000	86,500	...	110,500	+ + ...	...	+ 15	Treatment not early or sufficient.
7	3	Right arm.	...	...	+	...	...	...	...	60,000	...	60,000	+	25	...	...
8	2	Right hand.	+	...	...	...	...	16,000	...	64,000	4,200	84,200	Nil	...	+ 7	Treatment insufficient at commencement.
9	1	Left leg.	...	...	...	...	+	...	...	48,000	...	48,000	+	15	...	...
0	6	Left ankle.	...	...	+	...	.	...	...	48,000	...	48,000	+ + ...	16	...	...

action would not seem improbable, and in this relation the fact that in the 6 cases which recovered the condition of the wounds improved markedly whilst the patient was under serum treatment is worthy of note.

In Case 2 four intrathecal injections were made, and at the second the cerebro-spinal fluid was found to be turbid and loaded with leucocytes. Bacteriological and histological examination showed it was sterile; a further examination at the fourth puncture gave similar results. That intrathecal injections do cause irritation of the meninges is, of course, recognised, and one is tempted to ask whether the death of Case 4 after an intrathecal injection could have been due to this cause.

The classification adopted by the Tetanus Committee meets satisfactorily the ten cases that are here dealt with. The two cases Nos. 1 and 8, in which there were no prophylactic injections, were of the most acute type and fall naturally into Type A, 1. It is not always easy to differentiate between Divisions 2 and 3 of Type A, and so far I had no case which could be placed in Type 2. A comparison of the time of incubation, Col. 2, Table II., and the classification shows that the old relationship between rapidity of incubation and severity of disease does not hold in those cases where prophylaxis is practised.

Clinical Notes on Cases.

CASE 1.—R. B., aged 31. Wounded over left clavicle on May 1st, 1916. The wound healed rapidly, but the patient was left with some paresis of arm. No notes as to foreign body. On July 8th he was transferred to an auxiliary hospital; here a swelling developed over the left clavicle, which was incised on Oct. 9th on the assumption that it was inflammatory. Violent hæmorrhage ensued, and the cavity was hastily packed and the patient sent to the local general hospital for operation, where the axillary artery and vein were tied. On Oct. 13th trismus was observed, followed by risus sardonicus, and later very frequent general spasm. The operation wound was very extensive and extremely purulent. The patient died next day. He was given 12,500 units intrathecally, 6500 units intramuscularly. His general condition after the hæmorrhage and operation was so bad that it is improbable that he would have survived apart from the tetanus.

It is unknown whether this patient had a prophylactic injection of serum in France, he had none in England. In the wound were found many anaerobes, but no terminal round sporing ones. Inasmuch as these anaerobes must have arisen from contamination during the operation of Oct. 9th, it is to be assumed that the tetanus infection took its origin at the same time and was not a recrudescence.

CASE 2.—J. C. Severely wounded right upper arm and shoulder, with much bone destruction, on July 28th, 1916. The wounds remained dirty and the condition of the patient unsatisfactory, notwithstanding continuous and careful treatment. On Nov. 10th the patient did not feel so well. He described his condition as "feeling funny and queer all over"; took his food well; had no cramp or pain. Next day he could not eat his breakfast because of stiffness of jaws. Two hours later he had two attacks, separated by a few minutes, of clonic spasm in the right leg; forehead chronically contracted and a mild degree of risus sardonicus. Treatment was begun at once and energetically pursued by all routes. Sequestra were removed on eighteenth day of treatment. The condition of the wound improved markedly whilst under antitetanic serum, and the patient not only entirely recovered of the tetanus, but three weeks after the onset of the attack was in a decidedly better state of general health than before. 101,100 units of antitetanic serum given in all.

The patient stated that he had a prophylactic injection on July 29th, 1916. He received no other.

CASE 3.—C. C., aged 25. Wounded on Oct. 15th, 1916. Clean penetrating wound of left upper arm; no bone or nerve injury. After treatment in Norfolk War Hospital patient was sent to an auxiliary hospital for convalescence and discharged on furlough to duty. He complained of rheumatism in the left arm about Dec. 13th, and felt heavy and dull and had a bad headache for some days. After a few days of treatment at home by rubbing with embrocation he walked three miles there and back to see a doctor, and was sent by him to Colchester General Hospital. He stated that the farther he walked the worse he got, so that by the time he returned home not only his arms and shoulders were stiff, but his back and legs.

On admission the left elbow was fairly flexed at 60° and the tone of the upper arm and shoulder muscles greatly increased. The jaw was fixed to within ¼ inch between the edges of the incisor teeth and lateral movement abolished. Improvement as regards the movement of jaw and elbow was rapid, but the increased tone of muscles persisted long after all other symptoms had vanished, and was not gone till the end of the fourth week, although treatment was persisted in. The patient received 109,500 units, mostly intramuscular.

The patient stated that he had one injection of antitetanic serum on Oct. 15th, 1916. He received no other prophylactic doses.

CASE 4.—B. H., aged 21. Wounded on Sept. 15th, 1916. Compound fracture of left humerus. The wound healed completely. The patient stated that he had an attack of tetanus three weeks after wounding, that he recovered in three weeks, but at once relapsed and had tetanic symptoms for two weeks. Two months later he had a third more severe relapse. The attack here described was the fourth.

The patient was admitted to the Military Hospital, Lakenham-road, Norwich, on March 9th, 1917. The left side of the body was quite stiff, but no opisthotonos, frequent spasms on the left side of the body without pain, could only open his mouth half way. He was given 4500 units of antitetanic serum int amuscularly at once. At noon on the 10th, he was anæsthetised and I withdrew about 40 c.c. of clear cerebro-spinal fluid and injected 37 c.c. of serum containing 12,000 units and 4300 units intramuscularly. At 5.30 P.M. the patient was comfortable, spoke freely, and had an excellent pulse. At 6.30 P.M. he began to breathe heavily and severe tetanic spasm with opisthotonos, risus sardonicus, and clenched jaws supervened. At 8.15 P.M. he died.

Before giving the intrathecal injection the patient presented the symptoms of a subacute case and good hopes were entertained of his recovery. The sudden exacerbation of symptoms was quite unexpected and would seem to have been the result of the intrathecal injection. There was no question of anaphylaxis.

Nothing is known of any prophylactic injections, but he stated that he was treated with frequent injections in his previous attacks.

CASE 5.—Corporal H. W., R.F.C., aged 19. Wounded on March 28th, 1917, in an aerodrome at home on the scalp, which he soiled by touching his head with his muddy hands. On the evening of the 30th the patient developed stiffness of jaw, neck and limbs; movement of arms and legs gave rise to pain; the teeth could be separated only ⅛ inch and lateral movement of jaw was restricted. He had much difficulty in swallowing. Knee-jerk dull. Plantar reflex normal. On the 31st treatment was begun with 12,000 units intramuscularly and was continued till April 7th, when the patient had received 40,500 units. He made an uninterrupted and rapid recovery.

Although the symptoms were developed on the sixth day of a wound in the head and were of an extensive, though subacute, type the patient showed enormous improvement 24 hours after the first intramuscular injection and recovered completely within eight days of the onset.

CASE 6.—H., aged 32. Wounded on April 11th, 1917. Comminuted compound fracture of right arm and extensive flesh wounds of neck and back. Stiffness of neck was noticed on April 20th. The patient was sick on the 22nd, slow tetanic spasms of shoulder muscles and pectorals followed, and the nature of the case was realised on the 24th, when treatment began. Foreign body was removed under an anæsthetic on the 26th. The symptoms increased after this, and stiffness of the jaw was noticed on the 28th. The case was not notified till May 1st. On this date the jaw was locked to within ¼ inch between the incisor edges and lateral movement abolished; mild risus sardonicus. Knee-jerk = ++. Prior to this an intravenous injection of 24,000 units and 9000 units intramuscular were given. The general spasms and condition of the jaw showed immediate improvement, which persisted until the end. Unfortunately the patient had developed broncho-pneumonia soon after admission to hospital, and he died on May 5th apparently from this cause and with accompanying heart failure.

Patient stated he had a prophylactic injection on April 11th. Details of serum treatment are given below. It is probable, seeing how readily the tetanic symptoms reacted to treatment, that had the treatment been carried out energetically from the beginning the toxic affection of the heart might have been avoided and the case might have been saved.

Day of illness.	Intramuscular.	Intravenous.	Day of illness.	Intramuscular.	Intravenous.
4	500	—	11	—	24,000
6	2,000	—	12	6,000	24,000
7	5,000	—	13	14,500	—
8	12,000	—	14	2,500	—
9	12,000	—	15	6,000	—
10	18,000	—			

CASE 7.—A. S., aged 20. Wounded on April 25th, 1917. Compound fracture of right arm, with gas gangrene, amputation at shoulder-joint. The only symptom complained of by the patient was stiffness of the jaw dating from May 13th. The nurse had noticed some slight tremors of the left hand, but apart from this trismus was the only really definite tetanic symptom. The swinging movements of the jaw were markedly limited and separation of jaws was limited to ¾ inch between the incisors. There was no increase tone of muscles in neighbourhood of the wounded shoulder. The patient was treated by the intramuscular route, receiving 60,000 units in 11 days. Recovery was complete.

This case presented some difficulty of diagnosis, and the medical officer in charge was doubtful as to its true nature, but the limitation of lateral movements of the jaw was convincing.

CASE 7A.—Second Lieutenant C., aged 32. Wounded at bombing practice in England on May 25th, 1917. Penetrating ragged wound right chest, with hæmathorax, numerous lesser wounds about the body, destruction of left eye, and a small wound of left cheek, with minute foreign body in buccal muscles. On June 5th the patient noticed stiffness of jaw, the opening between incisors was limited to 1 inch. No difficulty in swallowing and complete freedom of lateral swinging movements of jaw. Knee-jerk normal. On the 6th there was slightly increased tone of the left masseter and also to a lesser extent of left trapezius, but none in the other shoulder muscles. The wound in the cheek was so slight that no dressing was applied. On the supposition that tetanus was present 60,000 units of antitetanic serum were given in a few days, but, although the general condition of the patient improved rapidly, the inability to open the jaws continued. On July 3rd the patient was entirely recovered except for the jaw movement, which was still limited to 1 inch between the incisors, although the lateral swinging movement was perfect. Palpation of the left masseter now shows a quite definite fibrous thickening of the anterior lower segment. This case was evidently not one of tetanus.

CASE 8.—C. R. S., farmer, aged 46. On July 13th, 1917, the patient, who had been under treatment some months for neuritis with double drop foot, slipped whilst walking in his kitchen garden and sustained a slight abrasion of the thumb. The path on which he fell had recently been soiled by an overflow of rain water coming from an adjacent highly manured bed.

On July 21st the patient developed trismus, with complete closure of jaws and general tetanic symptoms. Treatment was begun on the 22nd, but was not energetic. I visited the case on the 28th and gave 16,000 units intrathecally and 16,000 intramuscularly. The condition, however, of the heart and commencing œdema of the lungs was such as to preclude success, and he died on the 29th, the tetanus symptoms having considerably reduced in severity from the 27th.

Details of serum treatment are given below.

Day of illness.	Subcutaneous.	Intramuscular.	Intrathecal.	Day of illness.	Subcutaneous.	Intramuscular.	Intrathecal.
2	1,200	—	—	6	—	8,000	—
3	3,000	—	—	7	—	8,000	—
4	—	16,000	—	8	—	16,000	16,000
5	—	16,000	—	9	—	8,000	—

CASE 9.—McD., aged 27. Wounded on July 24th, 1917. Small penetrating wound at middle of flexors left thigh. Foreign body removed. The wound was healed on admission to hospital on August 3rd, 1917. Examination of the wound that day revealed a very definite tonicity of the muscles on the flexor surface of thigh around the wound and manipulation of the group elicited a spasmodic contraction of the whole limb. The patient complained of nothing, but on questioning volunteered the statement that a week after his wound when walking on the gravel path he noticed how the rough surface made his left leg jerk. Knee-jerk = ++. Plantar reflex flexor. The Achilles tendon-jerk obtained on left only, on which also could be demonstrated a pseudo-clonus of the ankle. Jaw muscles entirely unaffected. Treatment by intramuscular route 48,000 units in 13 days. complete recovery.

The patient had received a 500 unit prophylactic injection on July 24th.

CASE 10.—O., aged 20. Wounded on June 28th, 1917. Compound comminuted fracture of left ankle. After six weeks' Carrel-Dakin treatment of the wound, during the last two of which the patient was in my own ward, he casually remarked one morning that he had a pain at the back of his neck. Investigation showed that, whilst nothing definite could be made out at that spot, there was very marked trismus with complete absence of lateral jaw movements, some difficulty in eating which the patient had observed for five days, but had not considered worth mentioning, greatly increased tonicity of the abdominal muscles, and jerky sensations in the injured leg. Knee-jerk right leg = +.

Treatment was entirely intramuscular, 48,000 units in nine days, resulting in complete recovery of all tetanic symptoms and a marked improvement of the condition of the wound whilst under the influence of the antitetanic serum.

The patient had received a 1500 unit prophylactic injection on June 28th.

Barley, Royston, Herts.

Reviews and Notices of Books.

White and Martin's Genito-Urinary Surgery and Venereal Diseases. By EDWARD MARTIN, BENJAMIN A. THOMAS, and STIRLING W. MOORHEAD. Tenth edition. Illustrated with 422 engravings and 21 coloured plates. London and Philadelphia: J. B. Lippincott Company. 1917. Pp. 929. Price 30*s.* net.—In the present edition the twenty-years-old text-book has received a thorough revision at the hands of Dr. Thomas and Dr. Moorhead, respectively professor of genito-urinary surgery to the Polyclinic Hospital and assistant surgeon to the Howard Hospital, Philadelphia. The book has been kept back for this purpose and has been long out of print. Such recent developments as the tests of renal function, the laboratory diagnosis and control of treatment of syphilis, the value of serums and vaccines, separately and combined, receive sufficient mention. The authors do not accept without independent study the opinions of others and deprecate the routine antisyphilitic treatment of symptomless patients in whom the Wassermann reaction persists. In its present form the book will be found of practical service by all who are engaged in the treatment of genito-urinary and venereal disorders.

Reagents and Reactions. By EDGARDO TOGNOLI, M.D., Professor in the University of Modena. Translated by C. A. MITCHELL, B.A. London: J. and A. Churchill. 1918. Pp. 228. Price 6*s.*—Many reactions are still rather misleadingly known by the name of the chemist or physiologist who introduced them. For easy reference to these Professor Tognoli's little book will be found useful, especially as Mr. Mitchell has added the names of some important reactions not included in the original.

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. HALE WHITE. Sixteenth edition. London: J. and A. Churchill. 1918. Pp. 716. Price 7*s.* 6*d.* net.—It is fortunate that the continued sale of this essential handbook, even in war-time, has made it possible to bring out a new edition, dated ahead, and incorporating in an appendix the various official regulations incident to war-time prescribing. These deal chiefly with the use of sugar and glycerine in medicines, the prescription of cocaine and other habit-producing drugs, and the substitution of corn starch for that from other sources. The book is a safe guide to war-time as to peace-time practice.

Diseases of the Stomach, Intestines, and Pancreas. By ROBERT COLEMAN KEMP, M.D., Professor of Gastro-intestinal Diseases at the Fordham University Medical School, New York. Third edition. London and Philadelphia: W. B. Saunders Company. 1917. Pp. 1096. Price 30*s.* net.—In reviewing the second edition of this large book we called attention to its essentially practical nature and the large amount of useful details in diagnosis and treatment. This feature has been borne in mind in preparing the present edition, and especially the effects of X ray diagnosis in gastric, duodenal, and gall-bladder conditions. Other important additions are in the sections on hyperchlorhydria and obesity. Abundant charts and illustrations are given.

Formulary of Certain Drugs used in the Surgical Treatment of Tropical Disease. Compiled by T. F. G. MAYER, M.R.C.S. Eng., Senior Medical Officer, Sierra Leone. Freetown: At the Government Press. 1917. Pp. 106.—This is a useful little compilation from the pages of current medical periodicals and works of reference, and will meet the needs of the practitioner in the tropics who has not the necessary works at his hand. The Formulary is arranged alphabetically, beginning with acetyl-*p*-aminophenyl stibiate of sodium and ending with zinc chloride, convenience of reference being assured by separate indexes of actions, authorities, and diseases. While the information itself is commendably exact, great liberty is taken with authors' names, a large proportion of which are misspelled—e.g., Dufreane, Leishmann, Erlich, Morrison, Haffkein, and it is this kind of petty annoyance which may mislead the reader into concluding a more general inaccuracy. But the only formula we have found at fault—among very many—is CH_4O for formaldehyd.

Transactions of the Ophthalmological Society of the United Kingdom. Vol. XXXVII. Session 1917. London: J. and A. Churchill. Price 12*s.* 6*d.* net.—Along with a number of valuable clinical papers, some of which have appeared in THE LANCET, this volume contains a verbatim report of the important discussion on the employment of the blind, which is very timely in appearance in view of the public action which is in prospect.

A German-English Dictionary for Chemists. By AUSTIN M. PATTERSON, Ph.D., formerly Editor of *Chemical Abstracts.* London: Chapman and Hall, Limited. 1917. Pp. 316. Price 9*s.* 6*d.* net.—Dr. Patterson has had excellent opportunities as an abstractor to make a thoroughly useful dictionary and has known how to use them. His book is concise and easy of reference, and, as far as we have tested it, both exhaustive and accurate. Not the least useful part is the preface dealing with the differences of chemical nomenclature in English and German, and the method of dealing with difficulties of terminology. The dictionary should be in the hands of every serious chemical student.

Ligations and Amputations. By A. BROCA. Translated by ERNEST WARD, M.D.Camb., F.R.C.S. Eng. With 510 illustrations. Bristol: John Wright and Sons, Limited. 1917. Pp. 282. Price 8*s.* 6*d.* net.—Professor Broca's work on the technique of amputation is sufficiently well known to need no mention, and Mr. Ward has done well to make it accessible to English readers. The translation is clear and precise and quite worthy of the text and the admirable illustrations.

Origenes y Tendencias de la Eugenia Moderna. By JOAQUIN BONILLA. Liverpool: *Daily Post* Printers. Pp 96. Price 3*s.* 6*d.* net.—This little book, written in Spanish by the Consul of Honduras, summarises the history of eugenics from the Greek philosophers down to Mendel and Sir Francis Galton. The author deals with the conditions brought about in this country owing to the war and with their solution in the light of modern teaching. The book is primarily intended for Latin America, but will be read with interest in this country.

JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Cambridge University Press. Vol. LI., No. 6. Pp. 347–468. Price 9*s.*—The Metabolism of Arginine, by W. H. Thompson. This is the fourth contribution by the author on this subject and deals with the effects on the excretion of total creatinine in the urine; of (1) arginine given in combination with methyl-amino compounds, and (2) of certain substances known to be methylated in the animal body. The author's summary alone runs to over two pages, so we must refer the reader to the original paper.—Observations on Degenerated and Regenerated Muscle, by J. N. Langley. The observations were made on cats chiefly from the point of view of changes in muscle weight. The normal difference of weight of muscles on the two sides varied from 1 to 5 per cent.

The denervated soleus lost weight more rapidly and in regeneration it recovered its weight more rapidly than the other muscles of the leg. After compression of the peroneal nerve, even in three weeks, marked contraction was obtained on nerve stimulation. After nerve suture the recovery from atrophy was very much slower. The observation that irritability of regenerating nerve is low for galvanic as well as for induction currents was confirmed.—The Rate of Formation of Fibrin Ferment from Prothrombin by the Action of Thrombokinase and Calcium Chloride, by John Mellanby. The formation of fibrin ferment in this way proceeds in a manner similar to that in the activation of trypsinogen by enterokinase; the velocity of the change is small at the outset, but continues with a constantly increasing acceleration. Thrombokinase and the Ca ion hold a reciprocal relation to one another. Neither alone can activate prothrombin. The author suggests that the ultimate agent in the activation of prothrombin is the calcium ion. Pure prothrombin is not activated by calcium in any concentration, but prothrombin to which thrombokinase has been adsorbed becomes unstable in the presence of calcium salts in proportion to the number of kinase elements contained in the complex.—Reflexes Excitable in the Cat from Pinna, Vibrissæ, and Jaws, by C. S. Sherrington. From the sensitive mobile pinna of the decerebrate cat a number of pure reflexes can be elicited. The movements are protective of the pinna; some, the retraction and folding reflexes, seem directed against irritant touches—e.g., the settling of fleas—or against exposure to injury in fighting; others, the cover and head-shake and scratch reflexes, against the ingress of foreign matter—e.g., dust, water, insects into the meatus and its ampulla. The mechanical threshold for their elicitation is extremely low, while with the exception of the scratch reflex they are elicited with difficulty and uncertainty by electrical stimuli. The reflexes, although connected eminently with the hairs, are connected also with other skin receptors separate from the hairs. Some of the stimuli may be thermal. The afferent nerve fibres concerned with each of these reflexes are supplied by several segmental nerve roots. As a group the reflexes are subserved by the trigeminus, vagus, and first, second, and third cervical nerves. The superciliary vibrissæ evoke reflex closure of the eye; the maxillary vibrissæ evoke no reflex in the decerebrate preparation. Mechanical and electrical stimulation of the gum, teeth, both maxillæ and mandibles, and front part of hard palate evoke opening of the jaws, followed by rebound closure. The reflex is preponderantly unilateral. There is a large representation of the jaw-opening and superciliary reflex in the cortex cerebri, but no evidence of any cortical representation of pinnal reflex movements. All the reflexes are easily obtainable under narcosis. The pinnal and superciliary reflexes are readily obtained in the normal animal.—X-Acid as a Remedy in Polyneuritis and Beri-beri, by D. T. Hulshoff. Although beri-beri may not be a neuritis in the strict sense of the term, it depends upon a degeneration of the nerve fibres. In fowls polyneuritis can be cured by the administration of a small bean—*Phaseolus radiatus*. The author attempted to isolate the active principle. He found a crystalline acid which he regards as the active principle, but as its constitution is unknown he has called it X-acid. Fowls with polyneuritis were fed with dry extract of the bean dissolved in water, and this sufficed to cure the disease.—On the Reaction of the Blood in the Body, by T. R. Parsons. Under equilibrium conditions the hydrogen-ion concentration of blood as measured electrometrically is the same as that of its plasma. The red corpuscles play a large part in determining the ionic equilibrium in blood; the changes in reaction produced in blood plasma by increase of CO_2 tension are much greater than those produced in the whole blood. An increase of the relative number of red corpuscles to the extent observed in pathological conditions exerts an appreciable effect on the reaction of the blood in the body, and so on the respiratory equilibrium. The effect of oxygen in expelling CO_2 from blood is due to the increased acidity it produces. Carbon-monoxide, like oxygen, increases the acidity.—Some Actions of Adrenalin upon the Liver, by F. A. Bainbridge and J. W. Trevan. Adrenalin, when injected slowly and continuously into the blood stream, leads to obstruction of blood flow in the liver, and if the obstruction is prolonged the general circulation becomes profoundly modified and a condition of "shock" results. Anæsthetised cats and dogs were used, the blood pressure being recorded from the splenic and iliac veins and the volume of the liver by recording the volume of one of its lobes in a suitable balloon containing water. The observations of previous experimenters were confirmed as to the injection of adrenalin into a systemic vein or into a tributary of the portal vein in causing a rise of pressure, increase of volume of the liver, and an increased lymph flow from the thoracic duct with little or no alteration in the vena cava pressure; and these effects are equally well produced whether the hepatic artery is intact or ligatured. They are due to the setting up by adrenalin of some obstruction to the flow of blood from the liver into the systemic circulation. Constriction of the radicles of the portal vein may be a contributory factor to the rise of the portal pressure, but the most probable cause is narrowing of the capillary channels by swelling of the columns of liver cells.

The Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. XI., No. 41. October, 1917. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, and Melbourne: Humphrey Milford. Subscription price, 25*s.* per annum. Single numbers 8*s.* 6*d.* net each.—The contents of this number are: 1. Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, by W. Parry Morgan. The mode of action of this form of treatment is critically considered. It is suggested that it is possible to obtain good results by partial instead of complete collapse, and that the method of partial collapse can be applied to both sides at the same time. Dr. Parry Morgan is of opinion that partial collapse of a tuberculous lung tends to give rest to any consolidated portion and thereby to reduce auto-inoculation. He also states that a moderate degree of collapse does not materially interfere with respiration provided it allows sufficient normal tissue to function. As a rule he has injected about 300 c.c. at the primary operation, and if no difficulty is experienced on the first side he has proceeded to inject a similar amount on the other side, at the same sitting in cases where bilateral collapse has appeared to be desirable. Afterwards at intervals of a week to a fortnight he has given up to 500 c.c., provided it did not produce a positive pressure. He has not gone on with the treatment for more than two or three months. He suggests the use of a rather more elaborate apparatus than that usually employed, a description of which has already appeared in THE LANCET.[1]—2. A Simple Rapid Method of Estimating the Filtrate Nitrogen in Small Quantities of Blood and of other Body Fluids, by R. Donald. The importance of an estimate of the nitrogenous waste in the blood in the diagnosis and treatment of certain diseases, especially those of the kidney, is emphasised and a practical rapid method for laboratory use is detailed. Briefly stated, the method consists in precipitating the proteins, centrifuging instead of filtering, and then testing the clear centrifugate by an efficient hypobromite process.—3. Experiments with Cholæmic Red Cells and Normal Red Cells in the Production of a Hæmolytic Immune Body in the Rabbit, by Leonard S. Dudgeon.—4. A Method of Estimating the Vibratory Sensation, by J. L. M. Symns. A special tuning-fork and the method of using it are described. Records with charts of illustrative cases are given. Dr. Symns concludes that when the vibratory sensation is diminished over the sacrum, the disease involves the spinal cord; when it is impaired over one or other extremity, the disease involves the peripheral nerves only; while if it is general it indicates a systemic poisoning. Discussing the nature of the vibratory sensation, he suggests that it is dissociated from the sensations of pain and temperature, and that it appears to be a mixed sensation and closely allied to "deep sensibility."

[1] THE LANCET, 1914, ii., 90.

THE King has conferred the Order of Mercy on Colonel R. J. Blackham, C.I.E., D.S.O., M.R.C.P.E., who is now serving as A.D.M.S. of a Division in Italy.

THE Royal Dental Hospital, Leicester square, has received a donation of £250, being the amount bequeathed to the hospital by the trustees of the late Mr. Leopold Salomons.

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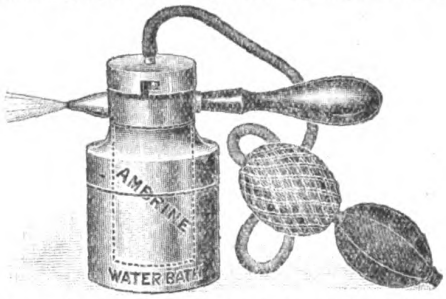
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A scientific production the value of which has been studied very closely. The effect is very prompt; from the second day of treatment the pain is relieved, the carbuncles begin to dry up, and those which are just opening are stopped in their course; the core is not expelled but reabsorbed.

In the majority of cases definite results are obtained within five or six days; it is seldom necessary to take the full ten days' treatment, and relapses are unknown.

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Non-toxic, produces no ill-results.

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Highly satisfactory clinical results.

Not only a Prophylactic against, but a specific in

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H.M.S.———, 27-7-17.

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W. B. H. W., Surgeon, R.N.

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24

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Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid.

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Increase of Appetite,

Colour and Strength.

WARWICKSHIRE, July 1st, 1917.

DEAR SIRS,—Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower-like growth has disappeared with its offensive discharge.

This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,

(Signed) B—— B——, M.R.C.S., L.R.C.P.

THE LANCET.

LONDON: SATURDAY, DECEMBER 29, 1917.

Fresh Light on Tetanus Problems.

AT a recent meeting of the Society of Tropical Medicine Professor WILLIAM BULLOCH described tetanus as a disease in the clinical knowledge of which there has been no advance since the time of Hippocrates, and he went on to marvel that 20 years after the introduction of antitoxin treatment its value to the patient should still be under discussion. This breezy reproach is being removed by the War Office Committee under the chairmanship of Sir DAVID BRUCE, whose fifth analysis of cases of tetanus treated in home military hospitals we published last week, and at whose instance we have been able to publish in this and in the preceding issue of THE LANCET a further series of valuable contributions to the study of tetanus from many points of view.

Statistically, what is to be said can be said briefly. Captain H. GREENWOOD admitted, in the debate at the Society of Tropical Medicine, a high degree of association between the use of prophylactic inoculation and the lengthening of the incubation period. Tetanus that takes long to develop, as a rule, gets well, and there is no need to look about for any other explanation of the diminished fatality than the prophylactic use of serum. But the association between large therapeutic doses of serum and the recovery-rate is not at all of the same order, and Sir DAVID BRUCE himself concludes that in regard to the therapeutic effect of antitoxic serum the evidence is still inconclusive. Prevention is, of course, better than cure, and in no disease more abundantly better than in tetanus, but the proportion of wounded men who continue to develop the disease in home hospitals is still put down at about 1 in 1000, and with the enormous size of the armies engaged the absolute number of cases of tetanus remains sufficiently serious to make a problem of first-rate importance. Prophylactic injection, besides so notably diminishing the number of cases requiring therapeutic injection, has also produced a new form of tetanus, the study of which is greatly adding to our store of useful knowledge. The facts of local tetanus have already brought Dr. FRED RANSOM to the view that tetanus toxin does not enter the central nervous system by the lymphatic or blood channels, but passes exclusively along the motor nerves and through the protoplasm of the neurons themselves. The toxin in nerves and nerve cells is inaccessible to antitoxin. Antitoxin is transported by the lymph and blood; it is not taken up by the nerves, and there is no reason for thinking that it ever reaches the nerve cells. This appears to agree with the clinical facts in man, although not quite consistent with the experimental results obtained by Professor C. S. SHERRINGTON with antitetanus serum on monkeys. Using a dose of 2 mgm. toxin per kilo. of monkey and following this dose up after a period of from 47 days upwards by an injection of 2000 U.S.A. units of antitoxic serum per kilo. of monkey, Professor SHERRINGTON was able to save the lives of 2 out of 25 monkeys by the subcutaneous route, 3 by the intramuscular route, 7 by the intravenous, and as many as 14 by the lumbar intrathecal route, and finally 13 out of 20 monkeys were saved by bulbar intrathecal injection. It would seem that under experimental conditions toxin which is already firmly united to nerve cells can be detached by a sufficient concentration of antitoxin in the surrounding lymph spaces. Some new examples of the fixation by nerve cells of various stereoisomerides were given last week in a summary of a lecture by Dr. F. L. PYMAN and may be read in this connexion.

The other articles in the tetanus series all contain observations of practical significance. Dr. N. A. COOPER'S account of more than 100 consecutive cases of tetanus in civil practice in India is useful as a control, inasmuch as there was in no case any chance of using antitoxin as a prophylactic. Many of his cases, too, had no external evidence of injury. Captain F. GOLLA'S lucid analysis of recent tetanus statistics gives the basis of mortality from the disease in pre-serum days and affords a further useful criterion for comparison. His figures also confirm the view that, apart from prophylaxis, serum treatment has so far not been shown to exert any influence on mortality. Captain R. N. SALAMAN'S notes on 10 cases illustrate the value of a particular sign—the loss of the swinging movements of the jaw—in the diagnosis of the developing disease. And, finally, Captain H. BURROWS'S interesting case of splanchnic tetanus is a further illustration of Dr. RANSOM'S view that tetano-toxin combines with any nerve cells with which it comes in contact, and that its apparent preference for the motor neuron is only accidental, inasmuch as it is to the muscles that the tetanus bacilli gain access in gunshot injuries, whence the toxin passes up to the motor nerve cells. Systematic combined work of this nature is rapidly removing Professor BULLOCH'S reproach and will, we hope, soon lead to an increase in our knowledge of tetanus which will exert a beneficial effect on its treatment.

The Care of the Pregnant Woman.

AT the present time, when we have to consider not only the falling birth-rate—common as it is to almost all the civilised nations of the world—but also the terrible loss of life among the younger and more virile members of the communities which are now plunged in grimmest struggle, it is impossible to exaggerate the importance of conserving the health of the expectant mother and her unborn child. The matter is one which is now attracting much attention, and steps are being taken in many of our large cities and in many rural districts to extend or to initiate this branch of preventive medicine. It is evident, however large a part is

played by heredity, that improved health cannot fail to be of benefit to the babe while still within the mother's womb. And it is difficult to realise how little, until comparatively lately, has been done in this direction, how many thousands of women pass through the whole of their pregnancy without once seeing or consulting their doctor, and how few medical men realise to the fullest extent what can be accomplished by antenatal care and treatment. For there are many measures which may be taken to ensure the health of the unborn infant, and to safeguard the mother from the perils which may beset her during the nine months of her pregnancy, a time when indiscretion or want of care may endanger not only her own life but also that of her baby.

We must admit that our knowledge of many of the problems of antenatal pathology is very scanty, but it is a fruitful field for investigation, and, without doubt, research in this direction, which will be much more possible in the near future than it has been ever before, will yield abundant results. The interest awakened on the part of the public generally in these matters has been very marked recently, and Maternity and Child Welfare Centres are springing up all over the country. These agencies are performing a very valuable work not only in educating young mothers in the proper care of their infants but also in encouraging them to seek medical advice as a routine measure at an early period of their subsequent pregnancies. When every expectant mother realises that it is not fair to herself, to her unborn child, or to her doctor, to withdraw herself from skilled supervision at all during her period of gestation, a very large step forward will have been taken in the promotion of preventive midwifery. It can be asserted truthfully that if every woman were compelled to enter a lying-in hospital for her confinement some thousands of lives would be saved in the United Kingdom every year as a result of the almost total abolition of the risk from puerperal sepsis; and similarly if every woman was compelled to place herself under the care of a doctor during her pregnancy the death-rate from the toxæmias and accidents of childbirth would be greatly decreased. It is a sad reflection to make that in this country more care is bestowed as a rule upon a thoroughbred mare when in foal than is bestowed upon the great majority of expectant mothers. It has been stated that "it is more dangerous to be a baby in London than a soldier in the trenches," but we may look forward to the time when it will be impossible to level such a reproach upon the nation, for the death-roll among infants is in reality the concern of every one of us. It is impossible to imagine that such a state of affairs will be allowed to continue in the better appreciation of the value of infant life which is becoming so widespread.

In a Presidential address delivered before the Royal Academy of Medicine in Ireland, Professor ALFRED SMITH advocates the establishment of what he terms expectant-mother hospitals and their endowment by the State. In the event of mothers being unable to enter such a hospital, he suggests that they should attend special dispensaries for advice and any necessary treatment. It is questionable whether it will ever be possible to get mothers among the poorer classes to enter such hospitals in any large numbers, and we are inclined to believe that a more general establishment of the maternity centres now in operation would meet the case to a large extent. At these centres the mothers can be watched and supervised, their health when necessary attended to, and their home conditions investigated and dealt with by the visitors working in association with the centre. The development of these centres, with the addition of pecuniary means for providing necessitous cases with proper food and, if necessary, whatever may be required at the time of the confinement, is even now making great progress, and in many of the larger hospitals at any rate there are beds available for any pregnant women who require special care or treatment. It would be impracticable to provide such hospitals for any very large number of expectant mothers, but the provision of well-equipped maternity and child-welfare centres all over the country, assisted if necessary by State funds, should be quite a feasible matter. It would not be a difficult thing in the course of time to persuade every woman to register her pregnancy at such a centre.

Annotations.

"Ne quid nimis."

THE PHYSICAL BASIS OF GENETICS.

To the average hearer the expert is never so interesting as when he comes out of *expertise* and makes contact with the world beyond his particular specialty, and Professor W. Bateson's lecture at the Royal Microscopical Society last week had the special interest of a borderland subject. Reviewing the newer American researches in cytology, Professor Bateson discussed how far these might be taken as forming a material basis for the well-known facts of genetics. The assumption that it is the individual chromosome which carries on a particular character from germ cell to germ cell is, of course, untenable, as there are far too few chromosomes in a nuclear skein for each to be the bearer of a single discontinuous characteristic. But Professor Bateson agreed that the American observers were well within their rights in associating the number of chromosomes with the inheritance of groups of characters—so-called linkage—although himself believing that there was some more ultimate physical basis common to both inherited character and nuclear filament. Many of the points which he made easily elude the mind when freed from the lecturer's personal magnetism, and from the hypnotic effect of genealogical tables and charts of Mendelian characters, and one of the practical deductions may be cited. Professor Bateson regards it as proven that in the inheritance of colour-blindness the male element must be taken as determining the sex. The spermatozoa, he concludes, are predetermined as male or female quite irrespective of the influence of the ovum they are to fertilise, whereas the converse is true in certain well-known instances in the animal kingdom. In the animal kingdom an extra, the so-called X-chromosome, has been shown to be present in the predominating

sex-element. Presumably the same also holds in man. At the close of his lecture Professor Bateson paid a generous tribute to the work of protozoologists and expressed a hope, which we share cordially, that a more coördinated study of genetics and protozoology will lead to the solution of some of the basic questions now at issue.

THE ADMINISTRATION OF LARGE DOSES OF QUININE BY HYPODERMOCLYSIS IN THE TREATMENT OF MALARIA IN TROOPS.

Professor U. Pende, of the University of Palermo, has used for more than ten years a method of treating malaria which he strongly recommends as effecting both a "therapia magna sterilisans" and an economy in the use of quinine. Subcutaneous or intramuscular injections have frequently failed to triumph over the infection even in doses of one gramme repeated daily for 20–30 days, whereas Professor Pende's method, which has nothing to lose in comparison with the intravenous by way of rapidity and certainty of action, has the advantage of being able to introduce into the circulation a larger quantity of quinine without any danger, and thus of paralysing to the utmost the vitality of the most resisting forms of parasite, even when entrenched in the depths of the various viscera.

The method consists in a hypodermoclysis, repeated every 5–6 days for 4–5 times, of 250 grammes of physiological salt solution, to which are added 2 grammes of bihydrochlorate of quinine, and half a cubic centimetre of 1 in 1000 solution of adrenalin. The technique is very simple, the middle of the anterior external part of the thigh being selected as the most favourable site for the injection, the fluid being held about 6 feet above the ground penetrates the tissues in 10–20 minutes and causes no pain; absorption is rapid, as the drug can be detected in the urine about an hour afterwards. The first injection is given, if possible, 6–7 hours previous to an attack and is followed by a second in 15–24 hours; on the fifth to sixth day a third is given, and after a further 5–6 days, a fourth, always in the same dose of 2 grammes, equivalent to 1·60 grammes of pure alkaloid. A week after the fourth injection quinine is given by mouth in doses of 2–3 grammes a day in 6–9 powders, for two days in succession every week for a couple of months, arsenic and iron being given on the intervening days. The effect of the treatment is that in the majority of cases the temperature falls completely, sometimes with a rapidity very striking in severe forms which have resisted previous treatment by quinine by the mouth or ordinary hypodermic injection. Sometimes there is a modified abortive attack one or two days after the second hypodermoclysis, followed by complete apyrexia. After about three months a perfect clinical cure results.

Professor Pende considers that the results would be still better, and reduce to the minimum the probability of relapses, if the treatment could be always applied in the initial attacks of a malarial infection—that is, before the formation of quinine-resisting gametes. There appear to be no contra-indications to these heroic doses of quinine in subjects free from organic disease of the circulatory system or kidneys. No traces of albumin are to be found in the urine, while the addition of adrenalin serves to counteract vasomotor collapse which might be apprehended from such large doses of the alkaloid in subjects specially predisposed to vascular atony.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE next annual Congress of the Ophthalmological Society of the United Kingdom will be held under the presidency of Mr. E. Treacher Collins, secretaries, Mr. S. A. Kinnier Wilson and Mr. M. S. Mayou, on Thursday, Friday, and Saturday, May 2nd, 3rd, and 4th, 1918. On Thursday, May 2nd, meetings

THE CONTROL OF VENEREAL DISEASES.

Venereal Disease in the U.S. Army.

A RECENT meeting of the College of Physicians of Philadelphia was entirely devoted to a discussion on the control of venereal diseases under the new conditions consequent on military mobilisation in the United States. Colonel T. H J. C. Goodwin, A.M.S., opened the debate with an account of the venereal campaign being carried on in this country, emphasising the fact that during active service the diseases are more adequately dealt with than in time of peace. Major W. F. Snow, of the U.S. Medical Reserve Corps, spoke of the authority given to the Secretary for War over the zones surrounding military camps. Every effort was being made to obtain the "social facts" from infected soldiers in order that "carriers" might be traced. Colonel F. F. Russell, of the U.S. Medical Corps, who has been commissioned by the Surgeon-General to organise the preventive side of anti-venereal measures, stated that the third week of the draft army showed an "astonishing increase" in the number of cases of venereal disease. He added: —

"Whether this means that these diseases are much more common among young men of military age in the civil population than we ever supposed I do not know. Certain it is, however, that we have almost 400 per 1000, whereas our highest rate in the last 20 years in the Army has been 162. . ...

We shall institute early treatment of venereal infection by all the so-called prophylactic methods, if possible, within a few hours of exposure. We shall make frequent inspection of the troops to discover concealed cases. We shall penalise a man who develops venereal disease by taking away his pay and his liberty until he is cured. If he develops venereal disease and does not avail himself of the facilities of treatment he will in addition be court-martialled, and if found guilty he will be placed in confinement at hard labour."

Colonel Goodwin spoke of venereal disease as being the commonest cause of invaliding in the U.S. service, others being in order of frequency: tonsillitis, influenza, bronchitis, diarrhœa and enteritis. Other speakers emphasised the crucial value of education and recreation. Mr. G. W. Braden, of the Central Y.M.C.A. of Philadelphia, quoted the fact that on the Mexican border, when the men were kept busy with wholesome games and amusements, the number applying for prophylactic treatment was very low, and Colonel Goodwin confirmed this view from experience of the Y.M.C.A. in this country.

The Teaching of Sex Hygiene.

Sir Thomas Barlow's address at the Annual Meeting of the Incorporated Association of Headmasters has been published in pamphlet form (price 2*d.*) by the National Association for Combating Venereal Diseases. The announced title of the address, The Teaching of Sex Hygiene, was widened to The Incidence of Venereal Diseases and its Relation to School Life and School Teaching, in order to give the speaker the opportunity of putting the headmasters present in possession of all the aspects of the subject which he thought would be useful to them. He spoke of the relatively high death-rate from syphilis among the upper and middle classes as compared with miners, textile workers, and agricultural labourers, and said that in some military camps officers had encouraged their men to enjoy themselves sexually when they had a chance. Sir Thomas Barlow then emphasised the need for self-control and a high moral tone throughout schools; no boy, he said, should be admitted to a public school unless the master had been informed how far the boy had been warned against masturbation, or until the boy had overcome the habit if acquired. To the boys leaving school he thought it was expedient not only to explain the value of continence but to make them understand the function of the testicles in supplying an internal secretion contributing to the energy and vigour of youth. The risk of acquiring sexual disease ought to be mentioned, but to normal boys was less effective as a deterrent than other arguments. He spoke of the value of a course of school lecture demonstrations on the principal facts of animal economy, but, in common with Huxley, would leave out the sexual organs in the first course. Sir Thomas Barlow's thoughtful and stimulating address will have interest for school doctors as well as teachers. Mr. Stephen Paget's lecture on Adolescence, in the Sheldonian Theatre, to Oxford University Extension Students has also been printed (London: Constable and Co. Price 7*d.*). So far, he says, as adolescence is concerned, if ever there was a time when we ought to speak plainly it is now. Whether we like it or not, the old habit of silence has for some years been falling away from us. What children need, however, is not physiology alone, but physiology and faith together.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Anti-Malarial Measures in Bengal.

THE Governor of Bengal has visited parts of the province to see for himself the nature of the anti-malarial measures being carried out. Malaria is very prevalent on the banks of the Ganges all the year round. The object of the measures adopted is to reduce the breeding places of mosquitoes to a minimum by turning the low-lying area into a single sheet of water at intervals during the flood season, and by draining it thoroughly both at the beginning and at the end of the rainy season.

The Blind of Bengal.

The report of the Calcutta Blind School for the year 1916 shows that 1916 is one of the most memorable years in the annals of the blind in India. It has witnessed the introduction of easy rates for "blind literature" packets by the Indian Post Office, the formation of an Association of Workers for the Blind in India, the publication of a magazine in Mysore in the interests of the blind called the *Light to the Blind*, and, most important of all, the issue of a circular by the Government of India on the question of the education of the defectives. During the year the Government of India also raised the question of teaching Indian soldiers who have returned totally blinded from active service some trade by which they could earn a little money with which to supplement their pension.

Public Health in Bombay.

Dr. J. A. Turner, the executive health officer to the municipality, in presenting his seventeenth annual report, states that, considering the circumstances and conditions prevailing, the health of the city of Bombay during 1916 has been extremely good, though not quite so good as in the exceptional year, 1915. At the same time he admits that, except in one or two matters of detail, little progress has been made in improving the sanitation of the city; this has been due to financial stringency on account of the war. The population in 1911 was 979,445, and on this census the sickness and mortality ratios have been calculated. The total death-rate was 31·21 per 1000, a reduction on the quinquennial average of 32·92 for 1911-1915, and lower than in any previous year except 1915, when the quite exceptional ratio of 24·17 was recorded. The death-rate for males (27·56 per 1000) was, as always, much lower than that for females (38·11), being largely to be accounted for by the preponderance of males, who form nearly two-thirds of the population. Hindus of various castes number 684,502, with a death-rate of 30·65; for Mussalmans the ratio was 36·91, for Parsis 19·22, and for Europeans 33·88 (in a population of 11,894). The infant mortality ratio (per 1000 births) was 387·8, being higher than in the three preceding years; about two-thirds of the births occur in tenements of one room, and with these infants the mortality ratio was 454 per 1000; in tenements of four or more rooms the ratio was 238, and among infants born in hospital not more than 92 per 1000. The municipal nurses and health visitors of the Sanitary Association and of the scheme started by Lady Willingdon, who are all qualified midwives, continue to do much good work in the prevention of disease and in the nurture of infants: there are three maternity homes for the poor, two new ones having been opened in 1916, and others being in course of formation; these homes are visited regularly by members of the Ladies' Committee; the health officer states that it is impossible to over-estimate the very valuable work which is being done in this direction, and which gives promise of further development. The mortality from epidemic disease per 1000 was higher than in the exceptional year 1915, but lower than in the decennium (1906-1915); small-pox caused 1021 deaths (1·04 per 1000), being considerably in excess of the decennial average (0·52); otherwise the figures show an improvement on the whole, except in the case of plague, which caused 1987 deaths (2·02 per 1000), more than three times the number of deaths in the preceding year, which, however, had been the lowest on record. Rat destruction was carried out vigorously, 943,346 having been collected and destroyed; nearly half of these were bacteriologically examined, the percentage found infected being 2·54, an increase on the percentage of infection (1·57) in 1915; in March the infected percentage was 6·57, and in April 7·30; the plague deaths in these two months were in the ratios of 6 and 8 per 1000 respectively. Wherever a case of plague occurred, or an infected rat was found, the place was treated with preventive

together with all the passages and gullies in connexion; 22,000 rupees were expended on disinfection by this and other disinfectants. Small-pox was more prevalent than in the preceding year and in the decennium: there were 1021 deaths, double the decennial average (511). Cholera caused 141 deaths, and prevailed throughout the year, though not with epidemic intensity. Tuberculosis continues to be both prevalent and fatal, having caused 1902 deaths (1·94 per 1000); this is higher than in the previous year (1·74), but less than the quinquennial average (1911–1915) of 2·29. A special inquiry was conducted as to its incidence; it was found that the Telugu community were highly infected, especially among women working under most unhygienic conditions. Owing to a severe outbreak of small-pox the Arthur Road Hospital was converted into a special hospital for this disease in April and May; afterwards cholera cases were admitted. The small-pox statistics at this hospital now extend over 29 years, embracing 10,393 cases; Dr. N. H. Choksy, who has been connected with this work throughout the whole period, points out that the case mortality for the vaccinated has averaged 15 50 per cent., for the unvaccinated 35·30 per cent.; the mortality among the latter was more than twice that of the former, although many of these were but imperfectly protected. A valuable series of cholera cases treated at the hospital from 1893 is also tabulated by Dr. Choksy; for the period 1893–1904 the recoveries were 25 per cent.; in the five years, 1905–1909, they average 47 per cent.; for 1910–1912, 52·30 per cent.; and for 1913–1916, 67·30 per cent. In this last period the treatment has consisted in subcutaneous injections (one to two pints of hypertonic saline) for all grave cases of collapse, and rectal injections in comparatively milder cases, supplemented by pituitrin, atropine and caffeine, or theobromin sodium salicylate, as required. Dr. Turner's report is full of interest and is supplemented by numerous detailed tables and a map.

Small-pox in Burma.

The Sanitary Commissioner of Burma in his latest report points out that small-pox is brought into Burma chiefly by sea, and that epidemics in India are generally followed by an outbreak in Burma. Rangoon is never free of small-pox, but the disease is kept in check by efficient vaccination.

Burma Medical School.

Chinese and Indian residents of Rangoon have subscribed to a fund for awarding prizes to successful students at this school. The Inspector-General of Civil Hospitals, Burma, and the Secretary to the Government of Burma have been appointed trustees of the fund.

Charitable Dispensaries in the Punjab.

The Inspector-General of Civil Hospitals of the Punjab estimates that at least 93 new dispensaries are required. But even with the contemplated additions there will be on an average no more than one dispensary for every 35,000 persons in the province, and it has to be remembered that the radius of influence of each institution is necessarily limited, and that there is no class of scientifically trained rural practitioner to whom the villager living remote from the nearest dispensary can turn for relief in his sickness.

Women's Work in India.

A women's registration bureau has been started in India to enable every woman to take a share in war work of some kind or other. In this relation the Lieutenant-Governor has issued a letter to all the commissioners and heads of departments at the request of the Commander-in-Chief in India appealing for assistance in obtaining the services of a certain number of hospital visitors and V.A.D. nurses who have passed the necessary tests for auxiliary service in station hospitals in Burma.

Military Sanitation in India.

It is officially announced that a standing sanitary committee will be formed in each division to consider and report on measures likely to conduce to an improvement in the health of the troops, both British and Indian, in cantonments, and to assist the Divisional Commander in initiating proposals for such measures.

Appointments in India.

Captain P. M. Rennie, I.M.S., having been posted to military duty, Major R. A. Needham, D.S.O., I.M.S., Assistant Director-General, I.M.S. (Stores), is appointed health officer, Simla, in addition to his own duties.

THE King has appointed Mr. Hugh Mallinson Rigby, surgeon to the Household, to be one of his Honorary Surgeons.

BY will the late Mr. Alexander Grant-Meek, of Devizes, and Lord of the Manor of Manningford Bruce, has left £1200 each to the Devizes Cottage Hospital, the Royal Mineral Water Hospital, Bath, and the Savernake Cottage Hospital.

Correspondence.

"Audi alteram partem."

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

To the Editor of THE LANCET.

SIR,—The terrible plight of these poor Belgian doctors and pharmacists is well known to the members of the committee, and is vouched for by the touching letter from Mr. Poland in your issue of to-day. Some members of the profession have given with great liberality to the Fund, and some, under the impression, I have reason to believe, that there was no great need, have contributed small sums, but when the need was pointed out have increased their subscriptions. May I appeal to others to do likewise and to give as generously as they can. I enclose my cheque for £25.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 22nd, 1917. HERBERT R. SPENCER.

THE ADMINISTRATION OF BROMIDE.

To the Editor of THE LANCET.

SIR,—There is probably no drug in the Pharmacopœia more valuable than potassium bromide, and yet it is one that is constantly decried by some physicians. It has always appeared to me that the dislike to this drug was largely due to the erratic way in which it was administered. It is usually given in larger doses than are necessary, and in order to counteract its depressing effect a stimulant such as strychnine or nux vomica is prescribed with it. Why not give a small dose and avoid having to give an excitant which is usually directly harmful to the patient who is in need of the bromide salt?

For many years I have been prescribing potassium bromide in very small doses, and I have found a small dose such as 5 grains once a day long continued far more efficacious than larger doses for shorter periods. In functional nervous disorders, such as neurasthenia and nerve exhaustion, and in traumatic neurasthenia reflex irritability is one of the earliest symptoms, and as this irritability increases, so the personality of the patient becomes more and more disturbed. Now if it is possible to control this irritability, the patient may rapidly improve and may continue to work with comparative comfort. I have found from long experience that 5 grains of potassium bromide once a day will control this reflex irritability. The smallness of the dose avoids the depressing effect of the salt, and it may be taken with great advantage for many years during the active business or professional life of the individual.

On finding the value of these small doses in controlling hypersensitivity and irritability in adults, it occurred to me that still smaller doses might be of value in childhood, and the results obtained have been equally satisfactory. The excitable and irritable child wears itself out, and as it grows further nervous and mental symptoms develop. For example, many persons, including children, who develop epilepsy have passed through one or more years of increasing nervous excitability. Correct this irritability and the epilepsy is prevented. That this is true I have proved in many cases; for example, I have prescribed one daily dose of 3 to 4 grains of potassium bromide for a child whom I regarded as a potential epileptic, and gradually the irritability would disappear; the dose was then discontinued under the usual belief that it was harmful to continue for any length of time, and slowly the symptoms would recur and finally culminate in an epileptic seizure. A physician need have no hesitation in keeping an excitable or nervous child on a trifling dose of bromide throughout the greater part of his school days. The potassium salt is undoubtedly more efficacious than the other salts and is not depressing in small doses. It is true that some cases of nerve exhaustion require larger doses to begin with, but it should be the aim in these cases to reduce the dose as soon as possible and then continue for years if necessary. The reason I recommend continuing for years is that once a person suffers from nerve exhaustion he will always tend to get a recurrence of his symptoms with stress and mental strain, and I find that the small daily dose of bromide is a great protective. I have never known a person

suffer from taking bromide in this way, but, on the other hand, it is only too common to see patients suffering from the want of it.—I am, Sir, yours faithfully,

Harley-street, W., Dec. 17th, 1917. MAURICE CRAIG.

THE TREATMENT OF EXOPHTHALMIC GOITRE BY X RAYS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 15th Lieutenant-Colonel T. P. Dunhill discusses the treatment of exophthalmic goitre from a surgical point of view. In the course of his paper—the fairness and courtesy of which might serve as a model in medical controversy—he makes the following remark:—

"It ought to be possible to obtain some unanimity of observation among men who are working along different lines to the same end. If experiences could be exchanged; if, above all, men of divergent views could see the same cases before and after treatment, or before and after operation, it should help."

As Lieutenant-Colonel Dunhill does me the honour to refer to me as one of the exponents of the X ray method of treatment, I think that perhaps a few comments on my part may help to bring nearer that mutual understanding for which he hopes.

In the first place, let it be said that the attitude of the surgeon and of the radiologist in approaching a case of exophthalmic goitre is essentially the same. Both admit the necessity of searching for ultimate causes; both know from experience that in the majority of cases, "the *manifestations* of Graves's disease are the manifestations of excessive and disordered functional activity of the thyroid gland." I say from experience, because the lessening of the amount of the thyroid hormone, either as a result of X rays to the gland, or from actual surgical removal of thyroid tissue, is nearly always followed by clinical improvement. Any difference of opinion is therefore limited to a consideration as to the best *method* of reducing the amount of secretion.

Before proceeding further, it is necessary to draw a sharp line of distinction between the *average* case and the resistant case. I use the word "resistant" rather than "severe" or "acute" because some of the most alarming cases readily yield to X rays, whereas now and then one of the more ordinary type fails to respond.

(1) When an ambulant case presents itself to the physician for treatment it is, of course, his duty to search for any possible cause and also to prescribe drugs, gland extracts, &c., according to his experience. He should also consider X rays, and, as an ultimate possibility, surgery. I do not think it will be claimed by anyone—certainly not by Lieutenant-Colonel Dunhill—that ambulant cases should be operated on forthwith. But is there any reason, apart from questions of convenience and expense, why they should not all be treated by X rays from the beginning? That X rays are beneficial is admitted by the highest authorities—e.g., by Professor Murray and Dr. Hector Mackenzie. Their use permits the patient to remain at work or play and does not in any way interfere with drug or hormone treatment. There is no risk of burning, and no attempt is made, in the *average* case, actually to destroy any thyroid tissue. To limit the activity of the gland, and at the same time to bring the type of activity back to normal, is the object aimed at. That, with the technique employed, no permanent deficiency of secretion results, is proved by the fact that the majority of cases are cured and remain healthy, while the remainder relapse into a hyperthyroidic state. That faulty methods may overstep the safe limit is true. The surgeon's knife in unskilled hands may slip. And the X ray tube is a subtle tool, calling for skill and experience in the user. But it remains broadly true that in the average case no risk is run, and that should an operation subsequently prove necessary its success will not have been in any way prejudiced by the X ray treatment. Especially is this so of late—within the past year—when the combination of the sinusoidal current with X rays has enabled us greatly to reduce the dose of the latter, without in any way interfering with efficiency as regards banishing symptoms, and with an improvement in the cosmetic effects.

The average ambulant case of exophthalmic goitre should receive X ray treatment from an early date. Definite improvement is often manifest within a month.

(2) *Resistant cases.*—These are cases which do not respond to the ordinary dosage of X rays, combined with other suitable medical treatment. The courses open are: (*a*) to increase the X ray dosage till it nears, or even reaches the sterilisation point; (*b*) to remove some of the gland tissue surgically.

The objections to (*a*) are that permanent thyroid feeding may be necessary, and that absolute safety to the skin cannot be guaranteed. As to (*b*) the drawback in the past has been the high mortality attendant upon the operation. No radiologist is anxious to treat such cases. If the operation mortality has been so reduced by recent improvements in technique as not to exceed that for, say, appendicitis then I, for one, am ready to retract what I have hitherto said about surgery in such cases and to recommend it. But I am firmly of opinion that few cases should need surgery if properly treated from the beginning. Ulceration of the cornea, visceral degeneration, and extreme emaciation ought never to occur. If suitable medical and X ray treatment does not produce definite improvement within a reasonable time operation should be considered, and this period should be reckoned by months rather than by years.

(3) There remains to consider briefly the case with acute onset, where the patient is bedridden from the start. Is such a case to be treated by setting up an X ray installation in the patient's house or by operation? Much will depend upon the stamina of the victim. If he is in no immediate danger of death, or if it is held that an operation would probably prove fatal, X rays are indicated. But immediate reduction of thyroid secretion can, of course, be secured only by surgery.

Lieutenant-Colonel Dunhill's paper was a fair and temperate statement from the surgeon's view-point. I trust these remarks by a radiologist may deserve the same epithets and may do something to bring about agreement rather than promote controversy.

I am, Sir, yours faithfully,

FRANCIS HERNAMAN-JOHNSON, M.D.

Harley-street, W., Dec. 22th, 1917.

CONGENITAL WORD-BLINDNESS.

To the Editor of THE LANCET.

SIR,—In the review of my book on "Congenital Word Blindness" in THE LANCET of Dec. 8th there is an error which I wish to correct. Your reviewer states: "He cites in some detail various cases of congenital word-blindness that have come under his notice, in one of which there is a report of the pathological condition." The report of the pathological examination thus referred to is on a case of *acquired* word-blindness, to which subject the first chapter of the book is entirely devoted; the report has nothing whatever to do with the cases of congenital word-blindness which are recorded in the subsequent chapters of the book. The insertion of these few lines in your columns will greatly oblige

Yours faithfully,

Mentone, France, Dec. 12th, 1917. JAMES HINSHELWOOD.

SUCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Louis Cobbett acknowledges that he cannot by isolation even cut off one source of infection, therefore this measure alone is bound to fail in stamping out the disease. Nevertheless, I agree with him, as I have said, that isolation is necessary, and I have no doubt he will keep urging the authorities to establish the 500,000 beds that will be necessary in Great Britain and Ireland. The tubercle bacillus at any rate, produces a sufficient degree of immunity to enable at least 85 per cent. of those infected to recover without aid. Pneumococcic pneumonia does not confer a marked degree of immunity in those who recover from it—on the contrary; and yet preventive inoculation is stamping out pneumonia amongst the South African miners.

Dr. Cobbett's hopes for the continued decline of the death-rate from tuberculosis are shown to be chimerical by Karl Pearson's investigations. Those who think that the reduction in the decline of the tuberculosis death-rate is solely due to the war are deceiving themselves.

Finally, since Dr. Cobbett does not deny that a relative immunity can be produced to the tubercle bacillus by inoculation with a suitable antigen, which I have shown is all that is necessary, and since he acknowledges isolation will not succeed in cutting off the source of infection, I must refuse to allow this measure of preventive inoculation to be side-tracked.—I am, Sir, yours faithfully,

W. M. CROFTON, M.D.

University College, Dublin, Dec. 17th, 1917.

THE LATE DR. ELSIE INGLIS.

To the Editor of THE LANCET.

SIR,—In the delightful and appreciative account of Elsie Inglis in your issue of Dec. 8th it is stated that she was brought up in "the strict tenets of the Plymouth Brotherhood." The facts are so much the opposite that it is perhaps worth while stating them. Her family on both sides have always belonged to the Anglican Church, and the atmosphere in which she was brought up was one of the most generous tolerance and of the widest and sanest outlook. Her family history in the religious line explains largely her own wide, sympathetic view of men and nations. She herself was a member of the Church of Scotland.

I am, Sir, yours faithfully,

Dec. 21st, 1917. E. H. MCL.

Obituary.

WILLIAM GILMORE ELLIS, M.D., M.R.C.S.,

PRINCIPAL CIVIL MEDICAL OFFICER, STRAITS SETTLEMENTS.

Dr. Gilmore Ellis, who died after an operation at the General Hospital, Singapore, on Oct. 8th last at the age of 57 years, obtained his medical education at St. Bartholomew's Hospital, London, qualifying in 1882, and taking his M.D. Brussels five years later. After acting for a time as resident medical officer and science master at Wellington College he became surgeon to the Eastern Extension Telegraph Company before settling down to his life's work in mental diseases. His first lunacy appointment was at Banstead, and in 1888 he was selected by the Secretary of State as medical superintendent of the Singapore Asylum, a post which he held for nearly 22 years, until his appointment in 1910 as principal civil medical officer of the Straits Settlements. A seat in the Legislative Council followed shortly after.

Dr. Ellis's long colonial career was one of ceaseless activity. At various times he acted as health officer to the Singapore Municipality and as resident surgeon to the General Hospital. He was one of the original members of the Straits Medical Association, founded in April, 1890, and during the life of that body was a constant contributor of clinical notes and papers. To the *Journal of Mental Science* he also contributed many articles of psychological value. During the eight years through which he filled the highest medical post in the colony he showed himself a good administrator as well as an indefatigable worker. Although due to retire on pension, at the outbreak of the war he offered to continue in harness in order to tide over the strain occasioned by the absence of nearly half the medical staff. This effort was doubtless contributory to his sudden illness and death; and it was no empty form which accorded him a funeral with full military honours.

Dr. Ellis's widow and two daughters survive him, as well as two sons who hold commissions in the Army and are on active service.

THE SERVICES.

ARMY MEDICAL SERVICE.

Lieutenant-Colonels relinquishing the rank of temporary Colonel on re-posting: A. W. Hooper, C.M.G., D.S.O.; M. MacG. Rattray, D.S.O.

Lieut.-Col. F. J. Greig, C.M.G., Reserve of Officers, relinquishes the rank of temporary Colonel on re-posting.

Lieutenant-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of Divisions: E. W. W. Cochrane, L. N. Lloyd, C.M.G., D.S.O., J. H. Campbell, D.S.O.

Temporary Colonels to be temporary Surgeon-Generals: Sir W. P. Herringham, C.B., Sir J. R. Bradford, K.C.M.G., C.B., Sir B. E. Dawson, K.C.V.O., C.B., C. S. Wallace, C.M.G., Sir B. G. A. Moynihan, C.B.

ROYAL ARMY MEDICAL CORPS.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major (temporary Lieut.-Col.) T. J. Wright, D.S.O., Capt. (temporary Lieut.-Col.) A. Irvine-Fortescue.

Major B. S. Bartlett retains the acting rank of Lieutenant-Colonel whilst commanding a Casualty Clearing Station.

Capt. H. A. T. Fairbank, R.A.M.C., T.F., to be temporary Lieutenant-Colonel.

Majors to be acting Lieutenant-Colonels whilst in command of a Medical Unit: P. C. T. Davy, C.M.G., R. H. Bridges, D.S.O.

Major E. T. Potts, D.S.O., to be acting Lieutenant-Colonel whilst employed as Assistant Director of Medical Services of an Army.

Major J. H. Graham is placed temporarily on the Half-pay List on account of ill-health.

R. F. Kennedy to be temporary honorary Major whilst serving with a General Hospital.

J. W. B. Thorburn, late temporary Captain, is granted the honorary rank of Captain.

Temp. Capt. J. M. Macmillan to be temporary Major.

Temporary Lieutenants to be temporary Captains: R. Cope, J. G. Macqueen, J. C. L. Day, A. Leeming, G. Cooper, C. Murphy, W. E. Burrows, E. W. Milne, S. E. Holder, T. F. Murphy, R. C. Corbett, A. MacMillan, A. B. Coomber, S. P. Pollard, C. E. Clay.

To be temporary Honorary Lieutenants: C. R. Bird, G. Lucas, D. E. Carter, A. Gregg, E. B. Fitzgerald, J. E. Bloomer, H. W. Woodward, W. M. Findley.

Officers relinquishing their commissions: Temp. Capts. W. B. Seaton, G. McI. Dale, G. A. McLarty, J. R. Burn, A. E. McKibbin, G. M. Huggins, J. B. Yelf, A. L. H. Rackham; Temp. Lieut. L. G. Teece (on account of ill-health), H. S. Vivian.

Canadian Army Medical Corps.

Temp. Lieut.-Col. J. M. Elder to be temporary Colonel.

Temp. Major A. C. Rankin to be temporary Lieutenant-Colonel.

Temp. Capt. (acting Lieut.-Col.) A. Croll to be temporary Major and to retain the acting rank of Lieutenant-Colonel.

Temporary Captains (acting Majors) to be temporary Majors: J. J. Ower, R. J. McEwen, T. F. O'Hagan, M.C., R. H. Smith, S. G. Ross, M.C., R. H. M. Hardisty, H. Buck, G. W. Treleaven, H. E. Paul.

Temporary Captains to be temporary Majors: R. F. Flegg, J. L. Cock, G. O. Taylor, R. M. Luton, M.C., J. McW. Taylor, A. H. Taylor, M.C., W. Brown, M.C., D. McLellan, J. W. Pilcher, N. G. Cooper, T. L. Butters, G. C. Hale, H. P. Wright, F. S. Ruttan, J. M. Stewart, H. H. Burnham, H. B. Boyd, E. D. Hubbell, J. H. M. Bell.

Temp. Capt. C. W. Waldron to be acting Major while specially employed.

To be temporary Captains: W. E. Ainley, Temp. Lieut. A. B. Whytock, Temp. Lieut. E. C. A. Crawford.

Canadian Army Dental Corps.

Temporary Lieutenants to be temporary Captains: E. G. Berry, R. H. Aljoe, C. N. Westwood, J. H. Reid, A. G. Fraser (from Western Ontario Regiment).

SPECIAL RESERVE OF OFFICERS.

Temp. Capt. D. McIntyre, from R.A.M.C., to be Captain.

TERRITORIAL FORCE.

Capt. (Brevet Major) R. L. Guthrie to be acting Lieutenant-Colonel whilst in command of a Hospital.

Temp. Capts. G. Hollies and J. Lytle to be temporary Majors, Shropshire Medical Volunteer Corps.

R. M. Wilson (late Lieutenant Colonel, R.A.M.C., T.F.), to be Medical Officer and temporary Captain, 1/1st Batt. County of Aberdeen Volunteer Regiment.

Capt. D. McP. Taylor relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Lieut.-Col. (Brevet-Col.) H. W. Webber is restored to the establishment.

Capt. (acting Lieut.-Col.) C. Cameron relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. H. L. P. Hulbert relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

G. T. Giddings to be temporary Major, and R. M. H. Randall and A. C. Haslam to be temporary Captains, Kent Medical Volunteer Corps.

C. W. Pilcher to be temporary Captain, Lincolnshire Medical Volunteer Corps.

TERRITORIAL FORCE RESERVE.

Capt. C. T. Matthews, from Field Ambulance, to be Captain.

URBAN VITAL STATISTICS.

(Week ended Dec. 15th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was equal to 13·6, against 11·9 and 12·4 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 13·7, or 0·6 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 5·2 in Rochdale, 5·5 in Edmonton and in Great Yarmouth, and 7·2 in Huddersfield, to 21·4 in Liverpool, 21·9 in Stockton-on-Tees, and 22·4 in South Shields. The principal epidemic diseases caused 376 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 119 from measles, 110 from whooping-cough, 67 from diphtheria, 56 from infantile diarrhœa, 17 from scarlet fever, and 7 from enteric fever. Measles caused a death-rate of 2·7 in Acton, 3·5 in St. Helens, 4·1 in Leicester, and 4·5 in Brighton, and whooping-cough of 1·6 in Liverpool, 1·9 in Wigan, and 2·3 in Middlesbrough. The 1330 cases of scarlet fever and 1679 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 21 below and 44 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 150 resulted from violence. The causes of 50 deaths were uncertified, of which 6 were

registered in Liverpool, 4 each in Birmingham and Manchester and 3 each in Preston, Barrow-in-Furness, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·1, against 12·5 and 12·9 per 1000 in the two preceding weeks. The 269 deaths in Glasgow corresponded to an annual rate of 12·6 per 1000, and included 7 from infantile diarrhœa, 6 from diphtheria, 5 from whooping-cough, 2 from enteric fever, and 1 from measles. The 76 deaths in Edinburgh were equal to a death-rate of 11·9 per 1000, and included 3 each from measles and diphtheria and 1 from scarlet fever.

Irish Towns.—The 135 deaths in Dublin corresponded to an annual rate of 17·6, or 0·8 per 1000 below that recorded in the previous week, and included 2 each from measles, whooping-cough, and diphtheria, and 1 each from enteric fever and infantile diarrhœa. The 93 deaths in Belfast were equal to a rate of 12·3 per 1000, and included 4 from infantile diarrhœa and 2 each from measles and whooping-cough.

VITAL STATISTICS OF LONDON DURING NOVEMBER, 1917.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 6·3 per 1000 of the population, estimated at 4,237,387 persons; in the three preceding months the rates had been 3·1, 4·2, and 5·3 per 1000. The lowest rates in November were recorded in Paddington, Kensington, St. Marylebone, Stoke Newington, Holborn, and the City of London; and the highest rates in Shoreditch, Bethnal Green, Stepney, Southwark, Bermondsey, Wandsworth, and Greenwich. The prevalence of scarlet fever showed a marked increase over that recorded in other recent months; this disease was proportionally most prevalent in Fulham, Chelsea, Bethnal Green, Bermondsey, and Wandsworth. The Metropolitan Asylums Hospitals contained 1335 scarlet fever patients at the end of the month, against 615, 807, and 1180 at the end of the three preceding months; the weekly admissions averaged 191, against 83, 138, and 177 in the three preceding months. Diphtheria was more prevalent than it had been in any of the preceding months of this year; the greatest proportional prevalence of this disease was recorded in Shoreditch, Bethnal Green, Southwark, Bermondsey, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1003, 1111, and 1393 at the end of the three preceding months, had risen to 1656 at the end of November; the weekly admissions averaged 239, against 122, 163, and 206 in the three preceding months. The prevalence of enteric fever was slightly more than in the preceding month; of the 34 cases notified in November, 7 belonged to Wandsworth, 5 to Stepney, 4 to Bethnal Green, 3 to St. Pancras, and 3 to Islington. There were 36 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 45, 46, and 38 at the end of the three preceding months; the weekly admissions averaged against 6, 6, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Islington, Shoreditch, Stepney, Poplar, Southwark, Lambeth, and Deptford. The 18 cases of puerperal fever notified during the month included 2 each in Fulham, Islington, Hackney, Poplar, Southwark, Lambeth, and Woolwich. Of the 13 cases of cerebro-spinal meningitis 4 belonged to Bethnal Green, 2 to Lambeth, 2 to Islington, 2 to Finsbury, 2 to Stepney, 2 to Poplar and 2 to Wandsworth; while of the 4 cases of poliomyelitis 2 belonged to Fulham.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending Dec. 1st the deaths of 4068 London residents were registered, equal to an annual rate of 12·6 per 1000; in the three preceding months, the rates had been 10·5, 11·0, and 12·5 per 1000. The death-rates in November ranged from 8·5 in Hampstead, 8·9 in Lewisham, 9·1 in the City of London, 9·2 in Fulham, and 10·3 in Woolwich, to 13·7 in Islington, 14·3 in Holborn, 14·9 in Southwark, 16·5 in Bermondsey, 24·1 in Finsbury, and 25·2 in Shoreditch. The 4068 deaths from all causes included 346 which were referred to the principal infectious diseases; of these, 155 resulted from measles, 9 from scarlet fever, 53 from diphtheria, 44 from whooping-cough, 5 from enteric fever, and 80 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in Chelsea, Stoke Newington, and the City of London; among the metropolitan boroughs they caused the lowest death-rates in Hammersmith, the City of Westminster, St. Marylebone, Hampstead, Wandsworth, Greenwich, and Lewisham; and the highest death-rates in Holborn, Finsbury, Shoreditch, and Stepney. The 155 deaths from measles were 50 above the corrected average number in the corresponding period of the five preceding years, and included 66 in Shoreditch, 37 in Finsbury, 19 in Stepney, and 7 in Islington. The 9 deaths from scarlet fever were 14 below the corrected average number, and included 4 in Wandsworth, 2 in Hackney, and 1 in Stepney. The 53 fatal cases of diphtheria about equalled the corrected average number; the greatest proportional mortality from this disease occurred in Shoreditch, Bethnal Green, Southwark, Bermondsey, and Lambeth. The 44 deaths from whooping-cough were 9 in excess of the corrected average number; this disease was proportionally most fatal in Shoreditch, Poplar Bermondsey, and Battersea. The 5 deaths from enteric fever were 3 below the corrected average, and included 1 each in Fulham, the City of Westminster, Islington, Stepney, and Southwark. The 80 deaths from diarrhœa and enteritis among children under 2 years of age were less than three-fifths of the corrected average number; the greatest proportional mortality from this cause was recorded in Paddington, St. Pancras, Holborn, Shoreditch, Lambeth, and Battersea. In conclusion, it may be stated that the aggregate mortality in London in November from these principal infectious diseases was 5 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1917.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years)	Total.	Annual rate per 1000 persons living.	Deaths from Enteric Fever to Population.	Deaths from Diarrhœa to Population.
LONDON	**4,237,387**	—	**784**	**906**	—	**34**	—	**18**	**268**	**23**	**4**	**2037**	**6·3**	—	**155**	**9**	**53**	**44**	**5**	**80**	**346**	**11**	**0·01**	**0·02**
West Districts:																								
Paddington	130,668	—	12	21	—	—	—	—	3	—	—	36	3·6	—	—	—	—	—	—	6	6	0·6	0·00	0·05
Kensington	152,144	—	13	18	—	2	—	—	8	1	1	43	3·7	—	1	—	2	3	—	2	8	0·7	0·00	0·01
Hammersmith ...	117,965	—	20	11	—	—	—	—	8	—	—	39	4·3	—	—	—	—	—	—	1	1	0·1	0·00	0·01
Fulham	149,428	—	40	21	—	1	—	2	6	—	2	72	6·3	—	—	—	2	3	1	1	7	0·6	0·00	0·01
Chelsea	57,298	—	14	3	—	—	—	—	2	—	—	19	4·3	—	—	—	—	—	—	—	—	—	—	—
City of Westminster	132,853	—	29	11	—	—	—	1	4	—	—	45	4·4	—	—	—	—	2	1	—	3	0·3	0·00	0·00
North Districts:																								
St. Marylebone ...	98,573	—	4	16	—	—	—	—	5	—	—	25	3·3	—	—	—	—	1	—	1	2	0·2	0·00	0·01
Hampstead	81,470	—	12	11	—	2	—	—	2	—	—	27	4·3	—	—	—	—	—	—	2	2	0·3	0·00	0·02
St. Pancras	196,812	—	27	53	—	3	—	—	11	1	—	95	6·3	—	1	—	1	2	—	8	12	0·8	0·00	0·04
Islington	309,359	—	69	60	—	3	—	2	23	2	—	159	6·7	—	17	—	5	5	1	6	34	1·4	0·00	0·02
Stoke Newington...	49,776	—	1	9	—	—	—	—	3	—	—	13	3·4	—	—	—	—	—	—	—	—	—	—	—
Hackney	209,636	—	41	24	—	2	—	2	10	—	—	79	4·9	—	1	2	2	1	—	5	11	0·7	0·00	0·02
Central Districts:																								
Holborn	38,161	—	1	3	—	—	—	—	2	—	—	6	2·0	—	3	—	—	—	—	3	6	2·0	0·00	0·08
Finsbury	74,230	—	11	18	—	—	—	—	2	2	—	33	5·8	—	37	—	—	1	—	1	39	6·8	0·00	0·01
City of London ...	20,113	—	—	2	—	—	—	—	—	—	—	2	1·3	—	—	—	—	—	—	—	—	—	—	—
East Districts:																								
Shoreditch	99,932	—	18	51	—	—	—	—	19	—	—	88	11·5	—	66	—	3	3	—	3	75	9·8	0·00	0·03
Bethnal Green ...	115,552	—	27	43	—	4	—	—	6	4	—	84	9·5	—	6	—	3	—	—	3	12	1·4	0·00	0·03
Stepney	258,395	—	55	75	—	5	—	—	30	2	—	167	8·4	—	19	2	4	2	1	5	33	1·7	0·00	0·02
Poplar	155,095	—	17	35	—	2	—	2	12	2	—	70	5·9	—	2	1	2	4	—	4	13	1·1	0·00	0·03
South Districts:																								
Southwark	177,166	—	36	55	—	1	—	2	19	—	—	113	8·3	—	—	—	4	2	1	4	11	0·8	0·00	0·02
Bermondsey	113,661	—	45	40	—	—	—	1	6	—	—	92	10·6	—	—	—	3	4	—	1	8	0·9	0·00	0·00
Lambeth	283,729	—	47	41	—	—	—	2	20	4	—	114	5·2	—	1	—	6	2	—	8	17	0·8	0·00	0·02
Battersea	159,402	—	25	17	—	—	—	1	11	—	—	54	4·4	—	—	—	1	4	—	5	10	0·8	0·00	0·03
Wandsworth	310,858	—	96	77	—	7	—	1	11	2	1	195	8·2	—	—	4	4	—	—	—	8	0·3	0·00	0·00
Camberwell	249,749	—	41	51	—	—	—	—	15	1	—	108	5·6	—	1	—	3	1	—	6	11	0·6	0·00	0·02
Deptford	107,696	—	13	30	—	1	—	—	11	1	—	56	6·8	—	—	—	1	1	—	3	5	0·6	0·00	0·03
Greenwich	94,452	—	20	58	—	—	—	—	6	—	—	84	11·6	—	—	—	2	—	—	—	2	0·3	0·00	0·00
Lewisham	162,901	—	37	25	—	—	—	—	5	1	—	68	5·4	—	—	—	3	1	—	4	8	0·6	0·00	0·02
Woolwich...	139,313	—	13	27	—	1	—	2	3	—	—	51	5·1	—	—	—	2	2	—	2	6	0·6	0·00	0·01
Port of London ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. McD. Matheson, R.A.M.C., attached Middlesex Regiment, qualified at Glasgow in 1916, and joined up shortly afterwards.

Died of Wounds.

Capt. N. McG. Smith, R.A.M.C., qualified at Glasgow in 1915, and thereupon joined the R.A.M.C.
Major T. J. Frizelle, Australian A.M.C.

Wounded.

Capt. J. F. W. Meenan, R.A.M.C.
Lieut. E. E. Owens, R.A.M.C., attached S. Staffs. Regiment.
Capt. A. E. Delgado, R.A.M.C., attached R.F.A.
Capt. D. T. Evans, R.A.M.C., attached Scottish Rifles.
Lieut. H. J. Henderson, R.A.M.C., attached Essex Regiment.
Major P. A. Maplestone, Australian A.M.C.
Capt. J. Manuel, R.A.M.C., attached Worcester Regiment.
Capt. O. Matthews, Australian A.M.C.
Capt. P. J. O'Shea, Australian A.M.C.
Capt. T. A. Townsend, R.A.M.C., attached London Regiment.
Capt. C. Cheochi, Australian A.M.C.
Capt. E. H. Lawson, R.A.M.C., attached N. Staffs. Regt.
Capt. R. G. Burnard, Australian A.M.C.
Capt. J. R. Forde, R.A.M.C., attached Leicester Regiment.
Capt. J. E. S. Smith, R.A.M.C.

Previously reported Wounded, now reported not Wounded.

Mathews, Capt. O., Australian A.M.C.

Missing.

Capt. F. W. Fawssett. R.A.M.C., attached L.N. Lancs. Regt.
Capt. H. B. Goulding, R.A.M.C., attached Gloucester Regt.
Capt. J. Davidson, R.A.M.C., attached K.R.R.C.
Capt. H. H. Fairfax, R.A.M.C., attached R. Warwick Regt.
Lieut. A. S. Garewal, I.M.S.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. A. M. Alexander, London Regt., killed in action, second son of Dr. S. P. Alexander, of Southsea.
Capt. G. F. Griffith, London Regt., previously reported missing, believed killed, now presumed killed in action, younger son of Dr. W. S. A. Griffith, of Harley-street, London, W.
Second Lieut. G. H. W. Gough, Cheshire Regt., killed in action, eldest son of Mr. H. E. Gough, M.R.C.S., medical officer of health of Northwich, Cheshire.
Second-Lieut. H. C. Elliott, Royal Engineers, died of wounds, second son of Dr. C. Elliott, of Clifton, Bristol.

FOREIGN DECORATIONS.

French.

Légion d'Honneur.—Croix de Commandeur: Surg.-Gen. H. R. Whitehead, K.C.B., R.A.M.C. *Croix d'Officier:* Lt.-Col. F. J. Brakenridge, C.M.G., R.A.M.C.; Lt.-Col. H. J. M. Buist, D.S.O., R.A.M.C.; Col. S. F. Clark, R.A.M.C. *Croix de Chevalier:* Capt. W. L. Murphy, R.A.M.C.

Croix de Guerre.—Temp. Lieut. W. E. Ord, R.A.M.C.; Capt. (acting Lt.-Col.) A. D. Fraser, D.S.O., M.C., R.A.M.C.

THE SHORTAGE OF MEDICAL MEN: THE ACTION OF THE MINISTRY OF NATIONAL SERVICE.

The Medical Examination of All Practitioners of Military Age.

To enable the Minister of National Service to compile an index brought up to date of the physical fitness of all medical practitioners throughout the country who are of military age, irrespective of whether they have or have not already served in the Royal Army Medical Corps, notices have been sent to such doctors requesting them, notwithstanding any previous examination, to present themselves for medical examination by a National Service Medical Board on or before Jan. 12th, 1918. If the doctor's ordinary residence is more than five miles distant from the place of examination his railway fare will be paid by the Ministry of National Service on application to the Deputy Commissioner of Medical Services. There is not the slightest need for any man who receives this notice to be under any misapprehension about it. In no sense is it a calling up notice; nor is it even a preliminary to a calling up notice, except in the case of men who would in any circumstances come under the consideration of the Professional Committees for Military Service.

The Annual Contract Call to Doctors who have Resigned Commissions since Oct. 31st.

It has been decined, with a view to maintaining the required number of officers in the Royal Army Medical Corps consistently with the least disorganisation of medical service throughout the country, to call upon all medical practitioners of military age who have resigned, or may resign, their temporary commissions on the expiry of an annual contract on and after Oct. 31st, 1917, to resume their commissions. This decision has not been arrived at without a very full consideration of the medical needs of the civilian population on the one hand and of the urgent requirements of the Army on the other, as well as of the services which such officers have already rendered. This proposal will not affect the customary privilege which has hitherto been accorded to the profession of laying any difficulties which individual practitioners may have in accepting or resuming service before a Committee of their professional colleagues.

The Minister of National Service, therefore, urgently requests the doctors concerned immediately to place themselves in the hands of the appropriate Central Committee in order that this Committee may be put in possession of the facts which will enable it to determine whether their services may again be placed at the disposal of His Majesty's Government.

The following are the addresses of the Central Professional Committees:—

The Central Medical War Committee, 429, Strand, London, W.C. 2, for all enrolled practitioners in England and Wales.

The Committee of Reference, 8 to 11, Queen-square, London, W.C. 1, for practitioners on the staffs of all hospitals in the London area.

The Scottish Medical Service Emergency Committee, 9, Queen-street, Edinburgh, for practitioners in Scotland.

VILLAGE CENTRES FOR THE CURE AND TRAINING OF EX-SERVICE MEN.

At the House of Commons meeting on Dec. 10th (see THE LANCET, Dec. 15th, p. 915) the question was raised as to the attitude of the Ministry of Pensions towards the scheme of the Village Centres Committee. As the result of a deputation which waited upon Sir Matthew Nathan on Dec. 14th the Ministry of Pensions has now signified its definite approval, so far as the general scheme of treatment and training of disabled men is concerned. While not otherwise associating itself with the part of the scheme relating to village settlement, the Ministry raises no objection to some of the temporary residents at a centre becoming permanently resident in the village if they desire to do so. The capitation grants will go far to cover the running expenses of the centre, and a grant for equipment of the workshops is being considered by the Minister of Pensions. The scheme for a metropolitan village centre for the London district is therefore now being made public. An estate has been chosen suitable for the purposes in view, and favourable reports upon the site and buildings have been received from medical, agricultural, horticultural, and industrial experts who have viewed the place. A Mansion House meeting will shortly be held to issue an appeal for funds to purchase the property. It is estimated that a sum of £150,000 may be required for the complete scheme.

METROPOLITAN HOSPITAL SUNDAY FUND.—The Lord Mayor of London presided over the annual meeting of the constituents of this Fund at the Mansion House on Dec. 20th, when the report of the Council for 1917 was unanimously adopted on the motion of Sir C. Ernest Tritton. The report stated that £76,354 6*s.* 5*d.* had been collected during the year, an increase of £5654 upon last year's figures. The collections in the various places of worship had resulted in a sum of £37,339, or £2218 more than in 1916. Sir Ernest Tritton said that never had the hospitals rendered such services to the community as they had in the past year. Their ministration to sailors, soldiers, airmen, women and children who had been victims of the air raids, and to the sick poor made everyone their debtors. The retiring members of the Council were re-elected for the forthcoming year and the following names were added: the Rev. Preb. Grose Hodge, Rev. Austin Thompson, Mr. John Latta, Mr. J. E. Moxey, Dr. W. T. Partridge, and Mr. Robert McConnell. Hospital Sunday for 1918 was fixed for June 23rd.

THE LANCET, VOL. II., 1917: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 29th will be ready early in the New Year. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES.

Part I.—Ormonde Alan Baker, University College; Joyce Rayner Batten, Newnham College; Dorothy Josephine Collier, London School of Medicine for Women; David Justin Davies, University College, Cardiff; Betty Dent, London School of Medicine for Women; Kenneth Henry Doouss, St. Bartholomew's Hospital; Keridwen Valentine Edwards, University College, Cardiff; Geoffrey Edward Woollcombe Felce, Guy's Hospital; Elizabeth Mai Genge, London School of Medicine for Women; Egerton Charles Grey, Guy's Hospital; Fred Cecil Hunt, London Hospital; Thomas Evans Jones, University College; Barney Kessel, Guy's Hospital; David Krestin, London Hospital; Alfred Quentin Logan, St. Thomas's Hospital; Mary Catherine Lynch and Dorothy McNair, London School of Medicine for Women; Framroz Nanabhoy Moos, Grant Medical College, Bombay, and Middlesex Hospital; Gwendolen Mary Pratt, London School of Medicine for Women; William Hedley Summerskill, Guy's Hospital; Maurice Lister Sutcliffe University College; Dick Brasnett Sutton, King's College; Harold Keith Tucker, St. Bartholomew's Hospital; Enid Margaret Williams, King's College; and Charles Paul Wilson, Middlesex Hospital.

Part II.—Percy Croad Brett, St. Mary's Hospital; Francis Cavers, University College; George William Cheater, King's College; John Joseph Coghlan, London Hospital; *†Rustam Nusserwanji Cooper, Middlesex Hospital; Charles Owen Davies, University of Liverpool; Evan Sherrah Davies, King's College and Westminster Hospital; James O'Farrell Fletcher, St. Mary's Hospital; Edward Emile Delisle Gray and Egerton Charles Grey, Guy's Hospital; Donald Hunter and Charles Arundel Hutchinson, London Hospital; Margaret Hypatia Kingsford, London School of Medicine for Women; ‡Geraldine Zarita Lee Le Bas, University, King's, and Bedford Colleges; Joseph Proujansky, London Hospital; James Victor Alexander Simpson, Middlesex Hospital; Madeline Hilda Jane Umpleby, London School of Medicine for Women and King's College; and Jacob Elias Zeitlin, London Hospital.

* Distinguished in Anatomy. † Distinguished in Physiology. ‡ Distinguished in Pharmacology.

M.D. EXAMINATION.

Branch I., Medicine.—Dorothy Cnick, B.S., London School of Medicine for Women; Hugh James Orr Ewing, B.S. (University medal), University of Bristol; Mary Emmeline Joll, B.S., London School of Medicine for Women; and George William Lloyd, B.S., St. Bartholomew's Hospital.

Branch V., State Medicine.—Philip Smith, B.S., King's College and Guy's Hospitals.

M.S. EXAMINATION.

Branch I., Surgery.—William Edward Tanner, Guy's Hospital.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FINAL M.B. AND CH.B.

C. F. J. Carruthers, James Charnley, J. C. T. Fiddes, M. C. Paterson, R. S. Paterson, and Elizabeth C. Powell.

Forensic Medicine.—Thomas Colley, S. E. Critchley, and F. L. Whincup.

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—Nooman Abdoh, Elizabeth C. Davies, Kathleen Doyle, Georgiana M. Duthie, Olive M. Gimson, F. G. Hamnett, Archibald Harris, Simon Kelly, J. N. Laing, J. G. Nolan, Olga G. M. Payne, F. L. Pickett, Effie Ratner, William Reikan, Annie G. Thompson, Doris M. R. Tompkin, and Ruth A. Wilson.

Pharmacology and Therapeutics.—R. J. Allison, Mary E. Boullen, Percival Fildes, Archibald Harris, A. E. H. Sadek, Ethel D. Willis, and James Yates.

Hygiene.—R. J. Allison, A. M. Cotes, E. B. A. Edelston, A. E. H. Sadek, Ethel D. Willis, and James Yates.

SECOND M.B. EXAMINATION.

May Ashburner, Martha F. Barritt, May Blakiston, F. A. van Coller, Phyllis M. Congdon, Margaret MacF. Corbold, J. W. Crawshaw, K. V. Deakin, Dorothy M. L. Dyson, A. M. El Aguizy, F. R. Ferguson, Evelyn A. Garnett, Joshua Harris, Sylvia K. Hickson, Irma Jehansart, Violet M. Jewson, Mary S. Jones, *H. A. Lomax, Alexander Maude, Doris B. Norman, *Emily M. Peach, Harry Rosenthal, *†Gerald Sheehan, Florence G. Sherry, Constance Snowdon, Annie E. Somerford, Geoffrey Talbot, Doris A. Taylor, H. W. Taylor, Mary I. Turner, Raymond Williamson, J. E. Wright.

* Distinction in Anatomy. † Distinction in Physiology.

Anatomy.—Florence M. L. Graham.

FIRST M.B. EXAMINATION.

Part III. (Organic and Bio-Chemistry).—Catherine M. E. S. Chapman, Gwendolen A. G. Edwardes-Evans, James Leather, Gertrude B. Leigh, and Nellie P. Marshall.

DIPLOMA IN DENTISTRY (*Final Examination*).

Dental Surgery, Dental Prosthetics, and Operative Dentistry.—Norman Flitcroft.

Third Examination.—E. L. Morgan.

UNIVERSITY OF BRISTOL.—At the Second Examination for the conjoined degrees of M.B., Ch.B. (Part I.), held recently, the following candidates were successful:—

Phyllis Beames, Macdonald Critchley, Madge Edith Golding, Winifred Grace Nott, John Augustin Prichard, Hilda Elizabeth Reynolds, Phyllis Thekla Siepmann, and Victoria Sophia Tryon.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 18th the following gentlemen, having passed the requisite examinations between Oct. 1st and 3rd, were admitted Fellows:—

Arthur Frederick Cole, Subodhchandra Datta, Sidney Forsitte, Joseph Geoghegan, William Moir Webster Shepherd, Robert Tennent, and Nathan Judah Wigram.

At the same meeting Mr. David Percival Dalbreck Wilkie was awarded the Liston Victoria Jubilee Prize of £100 for his valuable work and contributions with reference to abdominal surgery.

UNIVERSITY OF ABERDEEN.—The following degrees were conferred recently:—

M.B. and Ch.B.—John Bernard Mutch, Dennis Joseph Viegas Pereira, and Henry Roger.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Dec. 13th, with Sir Francis H. Champneys in the chair. A letter was considered from Dr. W. E. Fothergill, one of the Board's examiners from the Liverpool and Manchester Centre, forwarding certain criticisms by the examiners of that centre on some questions set at recent examinations. The Board decided that Dr. Fothergill be informed that the Board thinks that it is impossible to eliminate technical terms in teaching midwives: if they did so, the result would be to dissociate midwives from all relation with books referring to the study and practice of midwifery, and persons engaged therein. As regards elementary physiology, it rests with the teachers to make the subject intelligible to their pupils. It must be remembered that only such physiology is required as will make the subject of midwifery in its turn intelligible. To omit all instruction in elementary physiology would be to throw pupil midwives back upon their own resources; and it is with the view of rendering physical processes concerned in midwifery intelligible that elementary physiology was introduced into the syllabus. The Board recognises that the mental and educational standard of pupils varies in different localities, and believes that the teachers in Manchester have more difficulty from this cause than in many other centres. It has, however, taken the representations of Dr. Fothergill into consideration, and communicated them to the examiners in question.—Correspondence with the county medical officer of health for Derbyshire with regard to the practice adopted in that county in respect of the suspension of midwives was considered. The Board decided that Dr. S. Barwise be thanked for his letter. The Board hopes that an understanding will be arrived at between the local authority and the midwives as to the mode of disinfection authorised, and that the inspector may be sent, if necessary, as soon as the infection becomes known to the authority.—Correspondence with a Dutch subject, praying for admission to the Board's examination, was considered. The Board decided that, having satisfied the Board of her Dutch nationality, she be admitted to examination subject to compliance with the regulations prescribed for examination candidates.—Correspondence with a candidate of German origin, but the widow of an Englishman, and now domiciled in the United Kingdom, praying for admission to the examination, was considered. The Board decided that she be not admitted to examination during the period of the war.

INSTITUTE OF MASSAGE AND REMEDIAL GYMNASTICS.—The second annual general meeting of the Institute of Massage and Remedial Gymnastics was held in the Council Chamber of the University of Manchester on Friday, Dec. 7th. Sir W. Cobbett, President of the Institute, in the chair. Sir W. Milligan, chairman of the Executive Council, having given a report of the year's working, alluded to negotiations which took place between the Institute and the Incorporated Society of Trained Masseuses. It was unanimously agreed to authorise the executive to proceed with negotiations with a view to amalgamation with the Incorporated Society

Trained Masseuses, the final amendments and suggestions for union being as follows:—

(*a*) Registration on passing prescribed examinations to carry membership, and membership to carry the right to propose and elect representatives on the council. Men as well as women to be admitted to membership, and masseurs to have direct representation on the council in proportion to their numbers, with a minimum of one representative.

(*b*) All applications for membership from present holders of the society's certificate (1917) to be considered individually by the council up to a date to be determined later. Trained masseuses and masseurs holding a certificate other than that of the society may also become members after such tests as the council may determine.

(*c*) In addition to the founders and the representative of the masseurs, the council to consist as to two-thirds of elected and one-third of co-opted members. Two-thirds at least of the co-opted members to be medical men and women experienced or interested in massage or medical electricity, while one-third may be persons holding a certificate of massage, but if these are co-opted they must be members of the society.

(*d*) Of the elected members of the council, half to be proposed and elected as representatives of the recognised schools in which they shall be teachers or officials, and the remaining half to be other than teachers or officials in recognised schools.

(*e*) The names of all duly nominated candidates for council to be circularised to all persons on the society's register before the annual general meeting, and the election to be by postal ballot.

(*f*) Retirement from the council to be by rotation, one-third of the council going out every year, but retiring members to be eligible for re-election. The council to have power to elect a president and three vice-presidents to be *ex-officio* members of the council for a period of five years, when on retirement, they shall be eligible for re-election.

(*g, h, and i*) Examiners in practical subjects to be interchanged between various parts of the country; papers to be set by an examining board for the United Kingdom. Local boards to be appointed by the council as to two-thirds from persons nominated by the recognised training schools in the area, one-third being teachers or officials and one-third medical men and women interested in massage or medical electricity, and as to one-third by those persons on the register of the society resident in the area.

The financial control of the amalgamated bodies will rest with the council.

HUNTERIAN SOCIETY.—A meeting of this society will be held on Wednesday, Jan. 2nd, 1918, at 5 P.M., at the Royal Society of Medicine, 1, Wimpole-street, London, W., when the second Hunterian lecture will be delivered by Sir Robert Jones, C.B., F.R.C.S., on "War-time Orthopædic Surgery."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliamentary Recess.

PARLIAMENT adjourned over Christmas. The House of Lords reassembles very early in the New Year, but the House of Commons will not meet until Monday, Jan. 14th.

The Midwives (Ireland) Bill.

The Midwives (Ireland) Bill still awaits second reading. Motions in opposition to it stand on the notice paper in the names of Mr. SCANLAN, Mr. CRUMLEY, and Mr. O'SHEE.

HOUSE OF COMMONS.

TUESDAY, DEC. 18TH.

Grants in Aid of Auxiliary Hospitals.

Sir WILLIAM COLLINS asked the Financial Secretary to the War Office from what date the increased grants in aid of auxiliary hospitals, Classes A and B, of 3*s.* 3*d.* and 2*s.* 6*d.* respectively, had been payable; when the increased grants recently announced would be made payable in the case of voluntary hospitals established before the war and which were now receiving wounded soldiers as in-patients; and what the maximum grants to such hospitals in respect of such service would be.—Mr. FORSTER replied: The new rates which are maxima take effect from August 1st, 1917. If the hospitals referred to in the second part of the question are established civil hospitals, they are in receipt of grants on a different scale, and the question of increasing those grants is under consideration.

WEDNESDAY, DEC. 19TH.

Small-pox Cases in the Army.

Replying to Mr. BENTHAM, Mr. MACPHERSON wrote: The number of cases of small-pox in the Army in 1916 was 10; of these, 6 were unvaccinated, 5 of them recovered, and 1 died. Three were vaccinated in infancy, of whom 2 recovered and 1 died. One who was revaccinated, recovered.

Convalescent Soldiers.

Mr. BOWERMAN asked the Under Secretary for War whether wounded sailors and soldiers in hospital in this country were, when convalescent, allowed to go to their homes for a few days and then return to hospital or convalescent home or to their unit, and might then remain in this country for several weeks before returning to France or to their ships without being granted a second period of leave; and whether he would consider the desirability of allowing such men further leave for home-visiting purposes.—Mr. MACPHERSON replied: Unless for very urgent reasons, no soldier patient in hospital receives any leave. On discharge from hospitals all returned Expeditionary Force soldiers receive a furlough of 10 days before joining either a reserve unit or a command depôt. A soldier on home service admitted to hospital may, if the medical officer considers it necessary, also receive up to 10 days leave. If a soldier returned from an Expeditionary Force remains in this country for six months after his hospital furlough he again receives leave for a few days to his home. If a home-service soldier, he receives the same leave after nine months. All soldiers, if the exigencies of the service permit, receive four days' home-leave before being drafted overseas. With regard to sailors I must refer my honourable friend to the Secretary to the Admiralty.

Sale of Sterilised Meat.

Mr. W. THORNE asked the Parliamentary Secretary to the Ministry of Food whether a sterilised meat shop had been opened in Aberdeen, and, if so, was he in a position to issue a report about the matter.—Mr. CLYNES answered: I am informed that such a shop was opened last Saturday. I am obviously not in a position to issue a report about the matter.

Disabled and Discharged Soldiers.

Mr. DUNCAN MILLAR asked the Parliamentary Secretary to the Ministry of Pensions how many institutions had now been provided in Scotland for the treatment of disabled soldiers and sailors; and how many soldiers and sailors were receiving treatment in that country.—Sir A. GRIFFITH-BOSCAWEN answered: The number of institutions available for the treatment of disabled men in Scotland is 230, and further institutions are being provided. The total number of discharged men under treatment is not reported, but the number under treatment who are in receipt of a full allowance in lieu of pension under Article 6 of the Royal Warrant is 638.

Mr. HOGGE asked whether there were any training centres for discharged men in Ireland.—Sir A. GRIFFITH-BOSCAWEN answered: In Dublin training is in operation in optical and astronomical instrument-making, basket-making, carpentry, toy-making, gardening, care and management of horses, clerical work, manufacture, &c., of artificial limbs, pipe-making, and as motor mechanics. In Belfast there is training in commercial subjects, and courses have been sanctioned, but are not yet in operation, for cane chair-seat making, French polishing, and domestic assistance in hotels. Schemes for instruction in boot-repairing and box-making are under consideration.

THURSDAY, DEC. 20TH.

Army Dental Service.

Mr. PENNEFATHER asked the Under Secretary for War whether he had received an advance copy of a report about to be issued by a Parliamentary Committee which had been considering the relation between man-power and the Army dental service; and, if so, would he state what, if any, steps would be taken to carry out the recommendations contained in the report.—Mr. MACPHERSON said in reply: I received the advance copy of the report which my honourable friend has sent me. There has not been time to examine it, and I shall be obliged if my honourable friend will put his question down again in January.

Soldiers Suffering from Shell Shock.

Mr. HUGH LAW asked the Under Secretary for War whether he could assure the House that before soldiers who had been invalided suffering from shell shock or other nervous trouble were sent back to the front they were examined by a medical board containing at least one specialist in nervous diseases.—Mr. MACPHERSON answered: I cannot give this assurance at present, but under the new arrangements it is hoped that this desirable end will be attained.

Small-pox Case in the Navy.

Answering Mr. BENTHAM, who asked how many sailors developed small-pox in the year 1916, Mr. MACNAMARA (Secretary to the Admiralty) wrote: One such case occurred during 1916. The man recovered. No particulars are available regarding vaccination or revaccination in the case in question, but as the man was a stoker, Royal Naval Reserve, he was liable to be vaccinated or revaccinated as a condition of his entry into the Royal Naval Reserve.

Public Vaccinator for Dewsbury.

Mr. CHANCELLOR asked the Parliamentary Secretary to the Local Government Board whether the public vaccinator for Dewsbury was still paid by salary, and how many vaccinations he had performed during the past three years.—Mr. STEPHEN WALSH answered: The reply to the first part of the question is in the affirmative. The number of successful primary vaccinations performed by this public vaccinator at the cost of the rates during the years ended

Sept. 30th, 1914, 1915, and 1916, respectively, is 1021, 909, and 821.

The Cocaine Committee.

Mr. PEMBERTON BILLING asked the Home Secretary whether he had received a report as to the progress and recommendations, if any, of the Cocaine Committee; how many sittings this committee had held within the last six months; whether any changes had been made in the personnel of this committee during this period; what was the annual cost to the State of this committee, including salaries, rent, rates, taxes, printing, posting, and stationery; and whether this committee was to be continued.—Sir GEORGE CAVE replied: The Cocaine Committee was appointed by the Secretary of State at the time when the Defence of the Realm Regulation 40B, which regulates dealings in cocaine and opium, was made, for the purpose of advising upon any applications for permits under the regulation that might be made to them. A considerable number of applications were referred to, and reported upon by, the committee. It has not been necessary for the committee to hold any sittings during the last six months, but it is proposed to continue it in existence to deal with cases which may arise from time to time. There has been no change in its personnel. Accommodation and secretarial assistance have been provided at the Home Office, and no special expenditure in respect of salaries, rent, printing, &c., has been incurred.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

AUSTRALIA, COMMONWEALTH OF.—One Biochemist, salary £450; Two Senior Bacteriological Technical Assistants, salary £336; and Three Bacteriological Technical Assistants, salary £216 per annum.

BEDFORD COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £174 10*s.* per annum. Also House Physician. Salary £152 10*s.* per annum, with board, &c.

BIRKENHEAD. BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board, &c.

BIRMINGHAM, CITY OF.—Female Doctor for Infant Welfare Work. Salary £350 per annum.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon. Salary £200 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

GREENWICH UNION INFIRMARY AND WORKHOUSE.—Assistant Medical Officer, unmarried. Salary £200 per annum, with rations, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Two House Surgeons. Salary at rate of £100 per annum, with board, &c.

HULL ROYAL INFIRMARY.—Honorary Surgeon. Also Senior House Surgeon, unmarried. Salary £250 per annum, with board, &c.

MANCHESTER, BAGULEY SANATORIUM FOR TUBERCULOSIS.—Locum Tenens Second Assistant Medical Officer, unmarried. Salary £400 per annum with board, &c.

MANCHESTER CORPORATION.—Temporary Assistant Tuberculosis Officer. Salary £450 pe annum.

PRINCE OF WALES'S HOSPITAL, Tottenham.—Medical Officer to Venereal Department. Also Assistant Medical Officer. Salary at rate of £300 and £100 per annum respectively.

ROCHESTER, KENT, ST. BARTHOLOMEW'S HOSPITAL.—Senior Resident House Surgeon. Salary at rate of £300 per annum, with board, &c.

ST. PANCRAS INFIRMARY (SOUTH). Pancras-road.—Female Assistant Medical Superintendent and Assistant Medical Officer for house adjoining. Salary at rate of £300 per annum.

SALOP COUNTY COUNCIL.—Temporary Assistant School Medical Officer. Salary at rate of £400 per annum.

SCOTTISH WOMEN'S HOSPITALS (N.U.W.S.S.).—Female Chief Medical Officer. Salary £400 per annum, with board, &c. Also Female Assistant Medical Officer. Salary at rate of £300 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Senior Student as Assistant to House Surgeons. Salary as arranged, with board.

WOOLWICH, METROPOLITAN BOROUGH.—Female Assistant Medical Officer of Health. Salary £350 per annum.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Lanark. Applications should be addressed to the Private Secretary, Scottish Office, Whitehall, S.W. 1, not later than Jan. 11th.

Births, Marriages, and Deaths.

BIRTHS.

PORTEOUS.—On Dec. 15th, at Newbury House, Weston-super-Mare, the wife of Captain H. B. Porteous, R.A.M.C. (T.F.), of a son.

MARRIAGES

STOWERS—GUNN.—On Dec. 19th, at St. Marylebone Parish Church, Captain Raymond Stowers, R.A.M.C., to Enid Elizabeth, younger daughter of the late R. Marcus Gunn, F.R.C.S., and Mrs. R. Marcus Gunn.

DEATHS.

MOLE.—On Dec. 21st, at College-road, Clifton, Bristol, Harold Frederic Mole, F.R.C.S. Eng., aged 51 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A CURIOUS ACTION OF MERCURY ON ALUMINIUM.

To the Editor of THE LANCET.

SIR,—In THE LANCET (Nov. 24th: Dr. Cameron Kidd; and again in Dec. 15th, p. 917, Captain M. H. Fleming) attention is drawn to a curious action of Hg upon Al. The phenomenon is as follows: If a trace of Hg, or of solid $HgCl_2$, is rubbed into a sheet of Al foil, that metal almost immediately becomes dulled, presently a white layer forms, and in a few moments a very striking arborescent growth of white fluffy material sprouts up. Close inspection, better with a pocket lens, reveals a *visibly jerky* and rapid upgrowth of the white columns, which may reach a height of half an inch or more. The tufts are very fragile and easily blown away. Captain Fleming states that he has demonstrated this phenomenon to many people, including chemists, and that none of them "understood the reason why."

For some years past I have been familiar with the phenomenon, and have often shown it to friends, and at my lectures on materia medica. The explanation is, I think, simple, and in fact, was correctly given in a note to Dr. Kidd's communication. But as Captain Fleming is apparently not yet convinced I may be allowed to supplement the note. Absolutely pure Al is not readily oxidisable in air. Commercial Al is not perfectly pure, and contains traces of Fe and Si. The impure metal is more easily oxidised than the pure. Although the surface of the commercial Al is lustrous, it is really covered with a thin film of oxide which hinders further change and interferes with the process of soldering. Junctions are effected by riveting or welding. When Hg is rubbed on Al foil it makes an amalgam of Hg and pure Al. This amalgam rapidly oxidises, even in dry air, and forms Al_2O_3. The fluffy growth is hastened and intensified by breathing upon it, and doubtless some $Al(OH)_3$ is formed. If the white fluff be dissolved in dilute HCl and excess of NH_4OH added, an abundant flocculent precipitate of $Al(OH)_3$ is obtained.

These facts are long, if not generally, known, and were observed by Matignon in 1900 and by Kohn-Abrest in 1904 (see references in "A Text-book of Inorganic Chemistry," edited by J. N. Friend, 1917, Vol. IV., p. 56): "Aluminium rapidly oxidises if the surface is amalgamated with Hg, an arborescent growth of Al_2O_3 quickly forming all over the metal."—I am, Sir, yours faithfully,

WALTER G. SMITH, M.D. Dub.,
King's Professor of Materia Medica and Pharmacy.

Dublin, Dec. 19th, 1917. Trinity College, Dublin.

To the Editor of THE LANCET.

SIR,—Your correspondents Dr. Cameron Kidd and Captain M. H. Fleming will probably be interested in the following extract from "The Evolution of Matter," by Dr. Gustave Le Bon, which I happened to come across to-day. It occurs in a chapter on "The Variability of Chemical Species," where experiments on three metals, aluminium, magnesium, and mercury, are thus alluded to: "It will then be seen that by putting the first two of these metals in the presence of traces of various substances—for example, distilled water which has served to wash out an empty flask previously containing mercury—it becomes possible so to modify their characteristics that, if classified according to their new properties, their places in the list of elements would have to be altered. Thereafter these metals, which are generally without any action on water, decompose it violently; the aluminium instantaneously becomes oxidised in air, becoming covered with thick tufts which grow under one's eyes, and which give to a plate of polished aluminium the look of a jungle." A footnote to the above says, "In Europe this experiment seems to have passed almost unnoticed. Dr. Parodi, of Cairo, says, however, that he has repeated it with perfect success, and apparently much to his own astonishment." The experiment is described and illustrated on p. 409.

I am, Sir, yours faithfully,

Watton, Norfolk, Dec. 21st, 1917. H. MALLINS, M.B.

THE BRITISH SCIENCE GUILD.

WE have received a copy of the sixth number of the *Journal of the British Science Guild* which contains reports of the proceedings of the Guild and some important correspondence on new educational schemes, and the great question of scientific training in regard to industrial progress. Sir William Mather has resigned the presidency and is succeeded by Lord Sydenham. The executive and sub-committees show a strong caste of leaders of scientific thought. Copies of the journal may be obtained at the offices of the Guild, 199, Piccadilly, London, W. 1, price 6*d.* each.

MILK CARDS AND PROFESSIONAL SECRECY.

AN interesting ethical point has arisen in Paris in regard to the issue of milk cards on the prefectural order of Oct. 30th last. Cards are issued entitling the delivery of milk for children, but in the case of adults a medical certificate is required indicating the nature of the ailment which makes the taking of milk a necessity, the daily quantity of milk desirable, and how long the supply is required. A number of Parisian doctors have felt that the signing of a certificate for such a purpose involves the betrayal of the customary professional secrecy between the medical man and his patient. The editor of the *Paris Médical*, in commenting on this position, suggests that this is not the case, inasmuch as it is the patient who asks for the certificate, and no information passes behind his back between his medical adviser and any lay authority. When the condition is one, such as syphilis or cancer, in which the divulging of the ultimate diagnosis might conceivably prejudice the patient the medical man is not bound to convey the whole truth, but only the truth in so far as it entitles his patient to special consideration. In the case of syphilis with digestive disturbance the entry "digestive trouble" would meet the case without any fear on the medical man's part that he was violating the oath of Hippocrates.

MALARIA PROBLEMS.

REFERRING to the question of primary and secondary malaria discussed in our annotation last week (p. 905), a correspondent recalls the two well-known cases of experimental infection in England at the London School of Tropical Medicine by anophelines brought from Italy (THE LANCET, 1900, ii., pp. 923, 954). In both these cases, which are of capital importance, the primary infection was associated with the presence of simple tertian parasites in the blood.

DISABLED OFFICERS INTERNED IN HOLLAND.

THE first party of some 300 commissioned and non-commissioned officers to benefit by the new exchange scheme are expected to reach Holland this week. The conditions are the same as those for internment in Switzerland, and include forms of disablement precluding from military service while not entitling their bearers to repatriation. The Hague and Scheveningen are the places at present set apart for internment. The British Red Cross in Holland (address, Heerengracht 13, The Hague) is taking an active part in preparation for the reception of the men.

COLONIAL HEALTH REPORTS.

A REPORT on the Straits Settlements for the year 1916, signed by Mr. F. S. James, Colonial Secretary, has been presented to Parliament. In the section devoted to vital statistics it is stated that the number of births registered during the year was 22,342 and of deaths 24,371. The estimated population was 797,739. The birth-rate has decreased from 29·25 to 28·15 per mille. The death-rate has slightly increased, being 30·70 per mille as against 29·15 in 1915. The principal causes of death were malaria (3346 cases), infantile convulsions (3735), tuberculosis (1870), beri-beri (1075), and dysentery (791). Dangerous infectious diseases notified in the colony during the year caused 122 deaths from small-pox, 17 from cholera, and 23 from plague.

Snow.—(A) No. (B) No. (C) The lighter bony structure, but it is practically negligible.

Medical Diary for the ensuing Week.

SOCIETIES.

HUNTERIAN SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.
WEDNESDAY.—5 P.M., Hunterian Lecture:—Sir Robert Jones, C.B.: War-time Orthopædic Surgery.

CHILD-STUDY ASSOCIATION (CONFERENCE OF EDUCATIONAL ASSOCIATIONS), Mathematical Theatre of University College, Gower-street, W.C.
THURSDAY.—5.30 P.M., Discussion on the Education of the Clever Child (opened by Mr. G. F. Daniells and Miss M. Berryman).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

TO SUBSCRIBERS IN THE UNITED STATES.

Messrs. Wm. Wood and Co., of New York, are relinquishing their Agency for the supply of THE LANCET in the United States at the end of the present year. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on advertisement page 6.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

The following journals, magazines, &c., have been received:—Annali di Medicina Navale e Coloniale, Archives de Médecine et Pharmacie Navales, Bulletin de l'Académie de Médecine, Journal of the British Science Guild, Philippine Journal of Science, Tropical Diseases Bulletin, Magazine of the London School of Medicine for Women, British Journal of Dental Science.

Communications, Letters, &c., have been received from—

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O.—Ophthalmological Society of the United Kingdom, Lond.; Dr. J. S. Owens, Lond.

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J.—Dr. R. P. Jones, Prudhoe; Dr. F. H. Jacob, Nottingham; Dr. A. D. Jollye, Hemel Hempstead.

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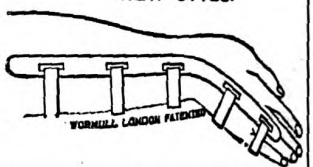
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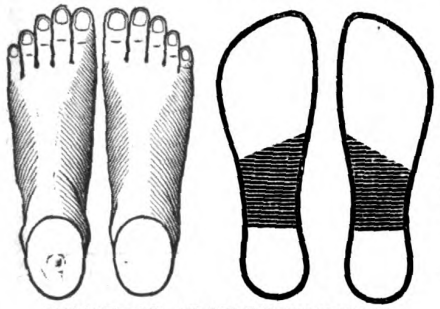


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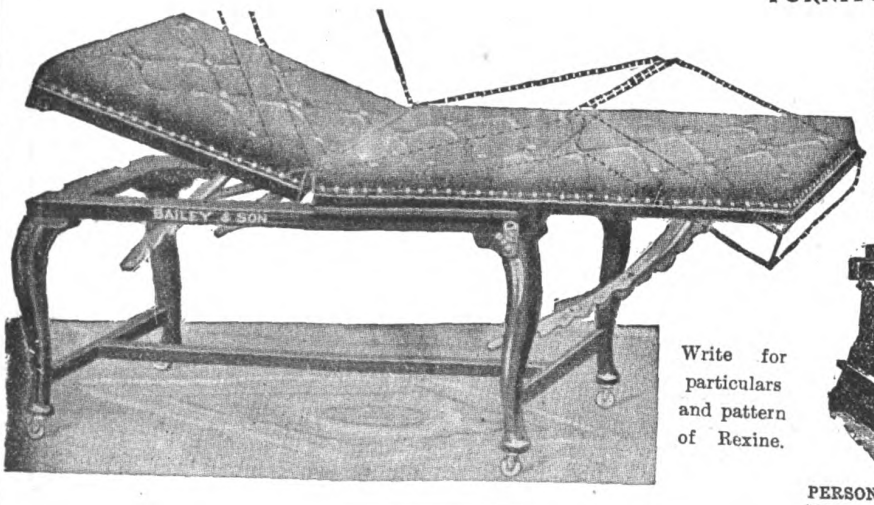
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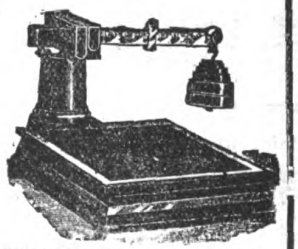
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Haslemere, Surrey.—The Haslemere Nursing Home. Altitude 700 ft. Medical, Weir-Mitchell, Rest-cure, General Nursing. Especially suited to Neurasthenia or to recruit after illness or operation. Gravel soil.—Apply, Misses Rattray & Moore, "Courtefold," Haslemere, Surrey. Telephone: 22 Haslemere.

Resident Patients.—Descriptive List (Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C.2

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.
Littleton Hall, Brentwood, Essex (400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations: Brentwood one mile; Shenfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes, Telephone and Telegrams: Haynes, Brentwood 45.

NORTHUMBERLAND HOUSE,
GREEN LANES,
FINSBURY PARK, N.
A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Mental and Nervous Affections. Highly situated, facing Finsbury Park.
Voluntary Boarders received without certificates.
For particulars apply to the Resident Physician.
Telephone No. 888 North. Telegrams: "SUBSIDIARY, LONDON."

CLARENCE LODGE
CLARENCE ROAD, CLAPHAM PARK.
Stations: Clapham Road and Clapham Common.
A Licensed Home for Mental and Nervous Patients.
Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.
Associated Rooms, Private Rooms, or Suites. Very moderate terms. Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.
Telephone: 494 Brixton.

HOME FOR FEEBLE-MINDED,
BRUNTON HOUSE, LANCASTER.
There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

BARNWOOD HOUSE HOSPITAL FOR MENTAL DISEASES,
BARNWOOD near GLOUCESTER.
Exclusively for private Patients of the Upper and Middle Classes This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to J. G. SOUTAR, M.B., the Med. Supt. [Tel. No. 307

THE WARNEFORD, OXFORD.
HOSPITAL FOR MENTAL DISORDERS.
President: The Right Hon. the EARL OF JERSEY.
This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. The grounds and gardens are extensive, the internal appointments are comfortable and refined, and the premises are lighted by electricity. The utmost degree of liberty, consistent with safety, is allowed to the patients, and amusements and occupation are amply provided. Parties are sent for change to the seaside during summer. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

ASHWOOD HOUSE
KINGSWINFORD
STAFFORDSHIRE.
An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.
Full particulars as to reception, terms, &c., may be obtained from the Resident Medical Officer.

HEIGHAM HALL, NORWICH

Telephone **For Upper & Middle Classes** 80 Norwich.

A Private Hospital for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with Special Attendants available. **Boarders** taken without certificates. **French Chef.** **Terms from 2 to 20 guineas weekly. Patients sent for.**
J. G. GORDON MUNN, M.D., F.R.S.E., Proprietor and Res. Phys.

STRETTON HOUSE,

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church-Stretton

PLYMPTON HOUSE,

PLYMPTON, S. DEVON.

This old established Licensed House offers every advantage that experience can suggest for the care and treatment of Mental Cases.
For terms, &c., apply to the Resident Physicians.
Telephone: No. 2, Plympton. Dr. ALFRED TURNER, Dr. J. C. NIXON.

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted.
For terms, &c., apply to the Medical Superintenden

SOUTH DEVON.

COURT HALL, KENTON

Near EXETER.

Private Licensed House for the Treatment of **MENTAL DISEASES.** Limited to Eight Ladies. Estab. 50 years.
Resident Physician—BERTHA MULES, M.D.
Terms on application. *Telephone: Starcross 19.*

LONDON FEVER HOSPITAL.

LIVERPOOL ROAD, ISLINGTON, N.

FOR THE TREATMENT OF NON-PAUPER PATIENTS SUFFERING FROM INFECTIOUS FEVERS.

Part of the cost is paid by the patient, the balance being found by the Hospital. There are a few private rooms, at 5½ guineas a week, payable weekly in advance. No aid is received from the rates. Subscribers domestic servants removed at small cost and treated free of charge.
For admission apply to the Secretary. W. CHRISTIE, Major.

MALLING PLACE, KENT.

For LADIES and GENTLEMEN of Unsound Mind.

Terms moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM, WEST MALLING
Telephone: No. 2 MALLING.

SPRINGFIELD HOUSE

Near BEDFORD.

(Telephone No. 17.)

A PRIVATE HOME for Mental Cases, established in 1837, surrounded by extensive grounds, reconstructed and modernised.

Terms from 3 guineas per week

(including Separate Bedrooms for all Suitable Cases).

For forms of admission, &c., apply to DAVID BOWER, M.D., as above, or at 5, Duchess-st., Portland-pl., W., on Tuesdays from 4 to 5.

WYE HOUSE, BUXTON.

ESTABLISHED 1857. *NEW INSTITUTION COMPLETED* 1901.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED.

VOLUNTARY BOARDERS CAN BE RECEIVED.

Situated 1200 feet above sea level. Facing south, sheltered from north and east. 14 acres grounds, tennis, croquet. Billiard rooms, theatre, workshop in house. Ten minutes from Pavilion Gardens, Baths, and L. & N.W. and Mid. stations.
For terms, &c., apply to the Res. Medical Superintendent, W. W. HORTON, M.D. (NAT. TEL. 130.

ST. ANDREW'S HOSPITAL

FOR MENTAL DISEASES,

NORTHAMPTON.

For the Upper and Middle Classes only.

President—The Right Hon. the EARL SPENCER, K.G.

This Registered Hospital is pleasantly situated in 118 acres of park and pleasure grounds.
Every facility is provided for cricket, football, hockey, croquet, lawn-tennis, bowls, golf, motoring, boating, and gardening.
Terms from 31s. 6d. a week. Voluntary boarders not under certificates are received.
Patients paying higher rates can have special Attendants, Horses and Carriages, and Private Rooms in Villas in the Hospital grounds, or at

MOULTON PARK,

a branch establishment, two miles from the Hospital, where there is a farm of 473 acres, which supplies the Hospital with meat, milk, and other farm produce.

BRYN-Y-NEUADD HALL, LLANFAIRFECHAN,

the Seaside House of St. Andrew's Hospital, is beautifully situated in a Park of 331 acres, close to the Sea, and in the midst of the finest scenery in North Wales.
Patients can enjoy good cricket, lawn-tennis, croquet, golf, trout fishing, and bathing.
Patients or Boarders may visit this branch for long or short periods, and can have Private Rooms in Villas in the Park.
For particulars apply to the Medical Superintendent, St. Andrew's Hospital, Northampton. TELEPHONE No. 56.

THE GRANGE, Near ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.C. Railway, Sheffield. Telephone No. 34 Rotherham.
Resident Physician—GILBERT E. MOULD, L.R.C.P., M.R.C.S. Consulting Physician—CROCHLEY CLAPHAM, M.D., F.R.C.P.E.

Telegraphic Address: "Relief, Old-Catton." Telephone: "290, Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, near Norwich.

A High-class Home for the **Curative Treatment** of Nervous Affections. Situated a mile from the City of Norwich. Special and **Separate** accommodation is provided for those suffering from Hysteria and for cases of **Incipient Mental** trouble, who can be received as **Voluntary Boarders** without certificates and occupy their own private suites of apartments. A staff of experienced nurses has been organised to take charge of patients in their own homes. For terms, &c., which are moderate and inclusive, apply to the Misses MCLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., &c., Medical Superintendent.

THE MOAT HOUSE, TAMWORTH. STAFFORDSHIRE.

A HOME for Nervous and MENTAL CASES.

Stations: L. & N. West. and Mid. Railways.
The House stands in grounds of ten acres (within five minutes drive of either station), and is devoted to the care and treatment of a few Ladies suffering from Nervous and Mental Affections, who enjoy the comfort, privacy, and occupations of home life. Voluntary patients are received without certificates. For terms, &c., apply to the Resident Licensees, EDWARD HOLLINS, M.A. Cantab., and (Mrs.) S. A. MICHAUX.

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.
Climate healthy and bracing.
Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL for the UPPER and MIDDLE CLASSES ONLY, EITHER VOLUNTARY or UNDER CERTIFICATE.

Patients treated and classified according to their social and mental condition. Terms from 31s. 6d. Private apartments on special terms. Established for 60 years. Under the same management 25 years. Recovery rate 50 per cent. Situated midway between MANCHESTER and LIVERPOOL. Two miles from Newton-le-Willows Station on the L. & N.W. Railway.

Medical Staff—

Resident Medical Proprietor - CHARLES T. STREET, M.R.C.S., L.R.C.P.

Resident Medical Superintendent - J. C. WOOTTON, M.R.C.S.Eng., L.R.C.P.Lond.

Consulting Rooms—

LIVERPOOL: 47, Rodney Street. Dr. STREET. Thursday, 2 till 4. Telephone 2456 Royal.

MANCHESTER: Winter's Buildings, St. Ann's St. Dr. P. G. MOULD; Dr. G. R. MOULD. Tuesday—12 to 1.30—Thursday. Telephone 7611 Manchester.

Other days by appointment.

Visiting and Consulting Physicians: Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney St., Liverpool. W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney St., Liverpool. G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Proprietor, Haydock Lodge, Newton-le-Willows.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11, Ashton-in-Makerfield.

CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1067.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

HOVE VILLA, BRIGHTON—A Convalescent Branch of the Above.



NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2053. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licensee, for full particulars.

PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." Telephone: New Cross 576

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN MENTALLY AFFLICTED, Certificated or otherwise. Dr. STANLEY GILL or Dr. HAYES GILL may be consulted at 31, RODNEY ST., LIVERPOOL, from 2 till 4 P.M. every Monday and Thursday. *For terms, &c., apply to* STANLEY A. GILL, M.D., M.R.C.P.Lond. Telephone—No. 8 FORMBY.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and other for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the bank of the River Colne. All kinds of out door and in-door recreations and pursuits.—For particulars, apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

Telephone: 16 Rickmansworth.

NEWMAINS RETREAT, NEWMAINS, LANARKSHIRE.

Licensed under the Inebriates Acts.

The House is devoted to the Care of LADIES of the upper classes only, who can be treated either under the Acts or as Voluntary Patients. The place stands high and the estate is extensive, with bracing air and in good shelter. It is very retired and beautiful, well situated for the treatment of inebriety, narcomania and other perversions, neurasthenia, hysteria, and minor mental ailments.

No patients under certificate of insanity can be received.

References: Dr. G. M. ROBERTSON, Dr. YELLOWLEES, Dr RISIEN RUSSELL, Dr. OSWALD, and others.

Terms and particulars on application to "Superintendent, The Retreat, Newmains, Lanarkshire." Nearest station, Hartwood, Cal. Rly.

CHYLLWOODS SANATORIUM,

Near COCKERMOUTH.

MR. ASTLEY COOPER, being engaged at a Military Hospital for Neurasthenia, is obliged to

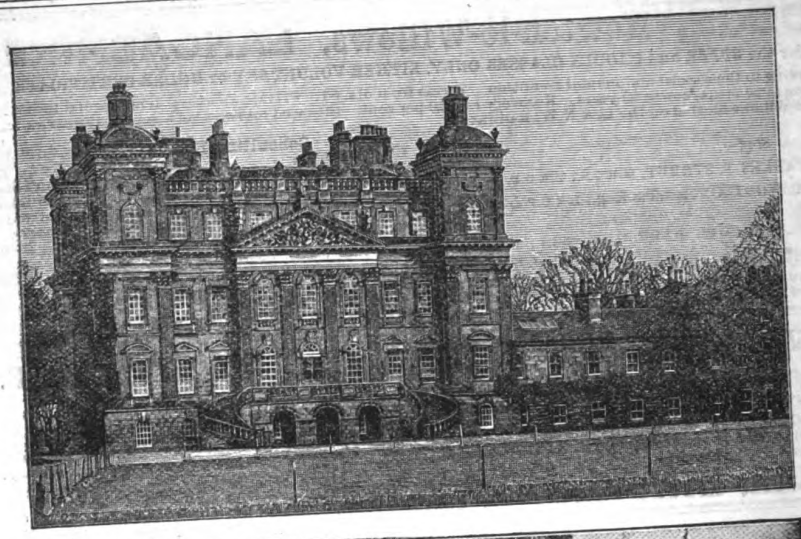
Close this Sanatorium till after the War.

INEBRIETY.

MELBOURNE HOUSE, LEICESTER.

PRIVATE HOME FOR LADIES.

Medical Attendant: ROBERT SEVESTRE, M.A., M.D. Cantab.
Principal: HENRY M. RILEY, Assoc. Soc. Study of Inebriety.
Thirty years' Experience. Excellent Medical References.
For Terms and Particulars, apply Miss RILEY or PRINCIPAL.
Telegrams: "MEDICAL, LEICESTER." Nat. Telephone: 769.



DUFF HOUSE, BANFF SCOTLAND.

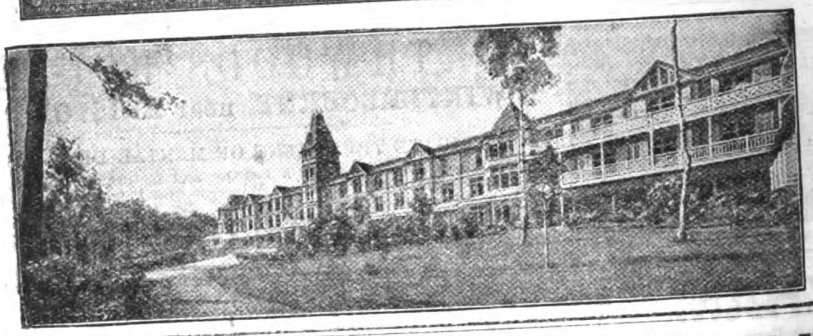
TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, DIABETES, GOUT,

and other complaints which need skilled chemical investigation and dietetic treatment.

The House is fitted with Laboratories, X-Ray Installation, Medical Baths, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply, The Secretary, Duff House, Banff.



NORDRACH-ON-DEE

(Near BALMORAL, SCOTLAND).

Open-Air Treatment of CONSUMPTION and Allied Diseases.

TUBERCULIN & VACCINE TREATMENT associated with Laboratory Control is available for all patients residing in this Sanatorium.

Research Laboratory. Fully Equipped Throat Room. Roentgen Ray and Ultra Violet Light Installations.

Address: Dr. LAWSON, Banchory, N.B.

MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT,

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate châlets, with verandahs, hot-water radiators, and electric light. Special features—breathing and graduated exercises, and continuous inhalation. Individual attention. *Resident Physician*—C. MUTHU, M.D., M.R.C.S., L.R.C.P.

Terms from 3½ guineas weekly. **For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.**

VALE OF CLWYD SANATORIUM

This Sanatorium (opened 1901) is established for the Treatment of Tuberculosis as carried out by Dr. OTTO WALTHER of Nordrach. It is situated in the midst of a large area of park-land, at a height of 450 feet above the sea-level, on the western slopes of mountains rising to over 1800 feet, which protect it from North and East winds and provide many miles of carefully graduated uphill walks—similar in character and extent to those at Nordrach.

Small rainfall. Porous subsoil. Large amount of sunshine. Electric Lighting and Hot Water Radiators in each room.

The physician himself was a patient at Nordrach.

For particulars, apply to GEORGE A. CRACE-CALVERT, M.B., &c., Llanbedr Hall, Ruthin, North Wales

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr. Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales.

DARTMOOR SANATORIUM. 750 FEET.

TUBERCULIN USED ONLY FOR SUITABLE CASES.

WITHIN EASY REACH OF THE MOOR.

Resident Physicians—C. H. BERRY, M.R.C.S., L.R.C.P.; ——— ———

Telephone: 11 Chagford

For particulars, apply C. H. BERRY. M.R.C.S., Sanatorium, Chagford, Devonshire.

For COMFORT and HEALTH Visit

THE CATERHAM SANITARIUM

"Battle Creek System."

Telephone: 88. Resident Physician:
Telegrams: "HYDRO, CATERHAM." A. B. OLSEN, M.D., D.P.H.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Telegrams: "SMEDLEY'S, MATLOCK."

Physicians: G. C. R. Harbinson, M.B., B.Ch., and Resident.

A complete suite of Baths, including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, and an Electric Installation for Baths and Medical purposes Dowsing Radiant Heat. D'Arsonval High Frequency. Roentgen X Rays. Fango Mud Treatment. Nauheim Baths. Special provision for Invalids. Large Winter Garden. American Elevator. Electric Light. Night attendance. Rooms well ventilated, and all bedrooms warmed in winter throughout the establishment.

MASSAGE AND WEIR-MITCHELL METHODS OF TREATMENT.

A large staff (upwards of 50) of Trained Male and Female Nurses, Masseurs, and Attendants. Prospectus and full information on application to H. CHALLAND, Managing Director.

The Royal Alexandra Hospital for SICK CHILDREN, Dyke-road, Brighton (61 beds).—A HOUSE SURGEON (Male or Female) required. Salary £200 a year, with board, lodging, and washing. Candidates must be registered under the Medical Act. Applications, with copies of recent testimonials, must be sent to Board Room, December, 1917. A. F. GRAVES, Secretary.

City of Birmingham.—Lady Doctor wanted for Infant Welfare work only. Salary £350 per annum, rising to £450. Three months' leave of absence, with salary, given for study at the expiration of every three years of service.

Applications to be made on form, which can be obtained from the Medical Officer of Health, the Council House, Birmingham, on or before January 12th, 1918.

St. Bartholomew's Hospital, Rochester, Kent (120 beds, 50 reserved for Military).—The House Committee invite applications for the post of SENIOR RESIDENT HOUSE SURGEON. Salary at the rate of £300 per annum, with board, residence, and laundry.

Candidates must be exempt from Military Service. Applications, with full particulars of qualifications, registration, experience, age, &c., together with copies of three recent testimonials, to be forwarded to the undersigned not later than Jan 5th, 1918.

Duties to commence on or before March 15th.

E. A. PEMBLE, Secretary.

Salop County Council.—Elementary EDUCATION DEPARTMENT.—MEDICAL INSPECTION OF SCHOOL CHILDREN.—Applications are invited for the appointment of Temporary ASSISTANT SCHOOL MEDICAL OFFICER, to work under the supervision of the School Medical Officer.

Salary at the rate of £400 per annum, with travelling expenses.

Application forms can be obtained from Dr. Wheatley, County Buildings, Shrewsbury, and should be returned on or before January 7th, 1918. H. E. WALE, Secretary for Elementary Education.

County Buildings, Shrewsbury, 13th December, 1917.

Bedford County Hospital.—Wanted, about January 3rd, a HOUSE SURGEON, unmarried (ineligible for Military Service).

Candidates must be duly qualified in Medicine and Surgery.

Salary £174 10s. per annum

Also a HOUSE PHYSICIAN with similar qualifications. Salary £152 10s. per annum. Applications for this post will also be received from Senior Students, when the salary offered is £2 2s. per week.

Board, lodging, and laundry are given.

Apply (stating willingness to accept the junior position if offered) with particulars and three recent testimonials, addressed to December 18th, 1917. BEAUCHAMP WADMORE, Secretary.

Greenwich Union.—Greenwich Union INFIRMARY.—Election of ASSISTANT MEDICAL OFFICER.—The Guardians require the services of a fully qualified medical practitioner as Assistant Medical Officer at the Infirmary and Workhouse.

Candidates must be single and not be eligible for service in H.M. Forces.

The officer appointed will be expected to act generally under the direction of the Medical Superintendent.

Salary £200 per annum, increasing £10 annually to £250, with furnished apartments, rations, and washing, subject to the statutory deductions under the Poor-law Officers Superannuation Act. 1896.

Applications to be made on forms obtainable from, or by personal application (by appointment) to, the Medical Superintendent at the Infirmary, Vanbrugh-hill, East Greenwich, S.E. 10.

By order. W. C. CORNISH, Clerk to the Guardians.

Guardians' Offices, Board Room, East Greenwich, S.E. 10, December, 1917.

The Borough Hospital, Birkenhead.—Wanted, JUNIOR HOUSE SURGEON. Must be fully qualified. Duties include Casualties and Anæsthetics. Salary £170 per annum, with board and laundry. Applications to be sent to the Secretary at the Hospital.

City of Manchester.—Second Assistant MEDICAL OFFICER to the BAGULEY SANATORIUM for TUBERCULOSIS.—The Sanitary Committee require the services of a fully qualified Medical Officer, with experience in the treatment of Tuberculosis, to act as LOCUM TENENS.

Applicants must be unmarried, ineligible for Military Service, and conversant with Bacteriological methods. The salary will be £400 per annum, with board and residence.

Applications, stating age, qualifications, and experience, and endorsed on the envelope "Second Assistant Medical Officer, Baguley Sanatorium," must be addressed to the Town Clerk only, and not to members of the Committee or Council, not later than January 8th, 1918, and be accompanied by not more than three recent testimonials.

Canvassing in any form, oral or written, direct or indirect, is prohibited THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, December, 1917.

Bristol Royal Infirmary.—Applications are invited for appointments of HOUSE PHYSICIAN and HOUSE SURGEON.

The appointments will be made subject to the terms and conditions of the War Office Scheme for granting commissions in the R.A.M.C., for which the successful candidates will be eligible.

Applications also considered from those ineligible for Military Service.

Salary at the rate of £120 per annum, with board, apartments, and laundry.

Candidates must possess registered Medical and Surgical qualifications.

For all particulars and conditions governing these appointments, apply to the undersigned, to whom applications, accompanied by copies of testimonials, should be sent immediately.

W. B. BUDGETT, Secretary & House Governor.

19th February, 1917.

The Hospital for Sick Children, Great Ormond-street, London, W.C. 1.—TWO HOUSE SURGEONS are required:—One on 23rd January, 1918; one on 1st March, 1918.

Candidates, Male or Female, are invited to send in their applications, addressed to the Secretary, as soon as possible, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible hospital appointment.

The appointment is made for a minimum period of six months. Salary at the rate of £100 per annum, washing allowance £5 per annum, and board and residence in the Hospital.

Candidates must possess a legal qualification to practise, and be ineligible for Military Service.

Candidates may be required to attend before a Meeting of the Joint Committees.

Forms of application can be obtained from the Secretary.

By order of the Committee of Management.

JAMES MCKAY, Acting Secretary.

Applications are invited for the following three positions in the Commonwealth of Australia:—

Serum Laboratories: ONE BIOCHEMIST to supervise the concentration of Antisera, Standardisation Sera, for examination of Disinfectants. Preference will be given to applicants possessing long experience in precipitation of Proteins and examination of Disinfectants. Salary commencing £450, increasing to £500.

TWO SENIOR BACTERIOLOGICAL TECHNICAL ASSISTANTS to supervise preparation in Tuberculin Mallein and other Diagnostic Agents. Preference will be given to applicants possessing long experience in these directions, also cultivation Spirochætes Fast Organisms. Salary £336, increasing to £408.

THREE BACTERIOLOGICAL TECHNICAL ASSISTANTS, with practical experience in method of immunising horses and handling Antitoxic Sera. Salary £216, increasing to £312. Quarters not provided. Passage to Australia paid.

Applications, which close on January 30th, should be addressed to the High Commissioner for Australia, Australia House, Strand, London, W.C. 2.

Metropolitan Borough of Woolwich.—Appointment of WOMAN ASSISTANT MEDICAL OFFICER of HEALTH.—The Council of the Metropolitan Borough of Woolwich, acting on their own behalf as well as that of the British Hospital for Women and Children and the Woolwich Day Nursery, invite applications for the appointment of Woman Assistant Medical Officer of Health to exercise general supervision of Infant Welfare Work in the Borough, conduct Infant Consultations and Ante-Natal Clinics, act as Consulting Medical Officer and Lecturer to the British Hospital for Women and Children and as Consultant Medical Officer to the Day Nursery, and generally to assist the Medical Officer of Health.

The appointment will be for the period of the war and for six months thereafter. Salary £350 per annum.

Candidates must be registered medical practitioners and have special experience in Infant Welfare work and Maternity; the holding of a Diploma in Public Health will be an additional recommendation.

Applications, stating age, previous experience, and present employment, accompanied by three recent testimonials, must be addressed to the Town Clerk, Town Hall, Woolwich, S.E. 18, and endorsed on the envelope "Assistant Medical Officer of Health," not later than Thursday, 10th January, 1918. By order.

ARTHUR B. BRYCESON, Town Clerk.

Town Hall, Woolwich, S.E. 18, 21st December, 1917.

York County Hospital (230 beds, including 110 for Soldiers).—HOUSE PHYSICIAN wanted (Lady). Candidates must be qualified and registered. Applications, stating age, with copies of three recent testimonials, to be sent at once to the undersigned. Salary £200, with board, residence, &c.

27th December, 1917. FREDK. NEDEN, Secretary and Manager.

Scottish Women's Hospitals (N.U.W.S.S.).—CHIEF MEDICAL OFFICER (Woman) required for Tuberculosis Sanatorium shortly to be established in France for Serbian patients. Salary £400 per annum, with uniform, board, laundry, and travelling expenses. Preference given to applicants who have had experience of modern Sanatorium methods and who are good linguists.

Apply, Personnel Secretary, 2, St. Andrew-square, Edinburgh.

ASSISTANT MEDICAL OFFICER (Woman) for same institution. Salary at the rate of £300.

Warneford, Leamington, and South Warwickshire General Hospital, Leamington Spa.—Wanted, a SECOND RESIDENT MEDICAL OFFICER, fully qualified and registered. Salary per annum £200, with board, residence, and laundry.

Applications, accompanied by not more than three recent testimonials, must reach the undersigned not later than the 15th January next. C. R. W. OFFEN, House Governor and Secretary.

24th December, 1917.

Applications are invited for the post of MEDICAL OFFICER to the VENEREAL DEPARTMENT at the PRINCE OF WALES'S HOSPITAL, Tottenham; also ASSISTANT MEDICAL OFFICER. Salary at the rate of £300 and £100 per annum respectively.

Applications and testimonials to be sent on or before the 31st December to FREDERICK W. DREWETT, Director, The Prince of Wales's Hospital, Tottenham, N. 15.

Appointments will be made subject to the approval of the Local Government Board.

Corporation of Manchester.—Applications are invited for the post of TEMPORARY ASSISTANT TUBERCULOSIS OFFICER for the City of Manchester, at a salary of £450 per annum.

Candidates must be fully qualified medical practitioners, ineligible for Military Service, having special knowledge of Medical and Surgical Tuberculosis.

Applications, stating age, qualifications, and experience, and endorsed on the envelope "Assistant Tuberculosis Officer," must be addressed to the Town Clerk only (and not to members of the Committee or Council) not later than January 8th, 1918, and be accompanied by not more than three recent testimonials.

Canvassing in any form, oral or written, direct or indirect, is prohibited. THOMAS HUDSON, Town Clerk.

Town Hall, Manchester, December, 1917.

Parish of St. Pancras, Guardians of the POOR.—Wanted.—The Guardians of the Poor of this Parish invite applications from duly qualified Medical Women Practitioners for the position of ASSISTANT MEDICAL SUPERINTENDENT of the ST. PANCRAS INFIRMARY (South), Pancras road, and ASSISTANT MEDICAL OFFICER for the HOUSE adjoining. The appointment to be made in the first instance for a period of one year, with salary at the rate of £300 per annum, with the usual residential allowances.

Though not essential, it is desired that the person appointed shall have had experience such as will enable her to be approved by the C.M.B. as a Pupil in Midwifery, with an honorarium of £10 10s. per annum for Lectures to Midwifery pupils.

Applications to be made on forms obtainable at my office as below by transmitting a stamped, addressed (foolscap) envelope.

J. E. P. HALL, Clerk to the Guardians.

Town Hall, Pancras-road, 18th December, 1917.

Hull Royal Infirmary. — The Appointing Committee are prepared to elect an HONORARY SURGEON to the Institution.

Applicants must possess the Fellowship of the Royal College of Surgeons in England, or Edinburgh, or Ireland, or have been an Hon. Assistant Surgeon of this Infirmary for five years.

Honorary Surgeons are appointed for a period not exceeding twenty years, or until attaining sixty years of age, and may not hold any paid appointment to any other Charitable Medical Institution or to a Workhouse.

Applicants are prohibited from personally canvassing, but may send copies of their applications and testimonials to the members of the Appointing Committee.

Applications, addressed "The Chairman, Committee of Management," must be received at the Board Room of the Institution not later than 10 o'clock A.M. on Wednesday, 9th January, 1918.

By order.

Board Room, 20th December, 1917. BENJAMIN BROOKS, Secretary.

The Royal Infirmary, Hull.—Senior HOUSE SURGEON wanted. The Hospital contains 125 surgical beds. There are in addition a resident House Physician, Assistant House Surgeon, and two Casualty House Surgeons. Candidates must be fully qualified, registered, and unmarried, and preference will be given to such as have previously held a similar appointment. The salary is £250 per annum, with board and furnished apartments. The selected candidate will be required to enter into an agreement to remain not less than one year and to give or receive three months' notice to terminate his engagement. Applications, stating age, qualifications, and previous experience, with copies of testimonials, to be sent addressed "Chairman, House Committee."

BENJAMIN BROOKS, Secretary.

Carnarvonshire Education Committee. — MEDICAL INSPECTION OF SCHOOL CHILDREN. — Applications are invited for the appointment of ASSISTANT SCHOOL MEDICAL OFFICER for the duration of the war, to work under the supervision of the School Medical Officer.

Salary at the rate of £400 per annum, with travelling expenses.

Application forms can be obtained from the undersigned and should be returned on or before January 13th, 1918.

EVAN R. DAVIES, Secretary of Education.

Education Offices, Carnarvon.

Wolverhampton and Staffordshire GENERAL HOSPITAL.—Wanted, Senior Student to act as ASSISTANT to HOUSE SURGEONS. The Hospital contains 262 beds (of which 82 are reserved for Wounded Soldiers), including the usual Special Departments, and is recognised by the various Examining Bodies for a part of the requisite attendances on Medical and Surgical practice.

Board, furnished rooms, and laundry provided, and an honorarium will be given.

Further particulars may be obtained from the undersigned.

W. H. HARPER, House Governor and Secretary.

Wolverhampton, 18th December, 1917.

Wanted, a Matron for Shell-shock Hostel. Salary £100, all found. — Address, No. 575, THE LANCET Office, 423, Strand, W.C. 2.

Ship's Surgeon. — Messrs. Elder Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £15 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

Locum Tenens.—No fee to Principals. —Mr. PERCIVAL TURNER has a large staff of trustworthy Gentlemen acting as Locum Tenentes, and will be happy to send them as required at short notice on application. — Address, 4, Adam-street, Adelphi, London, W.C. 2. Telegrams: "Epsomian, London." Telephone: 399 Gerrard.

Locums, well recommended, may still be obtained from Messrs. LEE & MARTIN, Ltd., 93, Hall-road, Handsworth, Birmingham. Telegrams: "Locum, Birmingham."

Locum Tenens Provided at ONE Hour's Notice.

APPLY

ARNOLD & SONS

(J. E. ARNOLD, E. R. ARNOLD),

Surgical Instrument Manufacturers,

TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C. 1.

Telegrams: "Instruments, London." Telephone: 5240 City.

Retired Asylum Assistant Medical OFFICER (ineligible for Military Service), wants Institutional or other light work. No Midwifery.—Address, L.R.C.P.E., 8, St. George's-terrace, Plymouth.

Medical Man, Scotch Triple, age 46, recently disposed of Practice S. London, reliable, experienced, wishes LOCUM WORK, Management of Branch, or War Locum anywhere out of air-raid area, preferably near London. Entertain Partner hip or good Nucleus within two hours London.—Address, No. 567, THE LANCET Office, 423, Strand, W.C. 2.

M.D., American University, extensive hospital experience, British subject ineligible for Military Duty, desires Hospital Position.—Address, No. 574, THE LANCET Office, 423, Strand, W.C. 2.

Voluntary War Work.—Lady Dispenser, part Hall qualified, would Assist Dispenser in Hospital or Convalescent Home for Soldiers, Board-residence only. Excellent references. Near London preferred.—Address, No. 576, THE LANCET Office, 423, Strand, W.C. 2.

Practices wanted with large Panels.—Messrs. LEE & MARTIN, Ltd., of 93, Hall-road, Handsworth, Birmingham, have many Clients on their books desiring the above.

Wanted at once, a Panel Practice of not less than 2000 in London. Cash available £250, balance payable by instalments.—Send details, in confidence, to Arnold & Sons, Transfer Dept., 6, Giltspur-street London, E.C. 1 (opposite St. Bartholomew's Hospital).

Large Midland Town.—Very old-established PRACTICE. Receipts £1262. Panel 1060. Excellent scope. Rent £60. Ample accommodation. Fees 2s. to 13s. 6d. Expenses small. Premium £930, part down and balance secured.—Lee & Martin, Ltd., 93, Hall road, Handsworth, Birmingham.

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